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JOURNAL
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VOL. XXXII MAY, 1950 No. 2

# OUR AGRICULTURAL AND TRADE POLICIES[1]

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*Michigan State College*

OVER the years a substantial quantity of American agricultural products have been sold in world markets. American farmers have been interested in foreign trade and trade policies. More recently there has been concern over relationships between our domestic agricultural price support programs and our international policy commitments as conflicts in policy become more and more evident.

Through operation of the Reciprocal Trade Agreements program and as a result of general upward price movements, tariff rates charged by the United States on dutiable imports have been cut to one-fourth the percentage of value (ad valorum equivalent) charged in 1932, and to less than half that charged in the 'twenties. While sponsoring extensive tariff reductions, we have imposed a large number of non-tariff restrictions to trade, mostly since 1940 and mostly on agricultural products. Furthermore, we protest against foreign dumping in our market and erect countervailing duties against such action; yet we are ourselves proceeding very rapidly toward an extensive program of dumping our agricultural surpluses on other nations.

The purpose of this article is to review recent international trade

[1] Journal article No. 1123, Michigan Agricultural Experiment Station.

[2] The author wishes to make acknowledgement to officials of the Department of Agriculture, Department of Commerce, Tariff Commission, American Farm Bureau Federation, and particularly to Mr. W. T. M. Beale in the Department of State for assistance in providing material on which this study is based. Suggestions for the improvement of an earlier draft of this manuscript were also made by Oscar Zaglitz, H. P. Macgowan, W. T. M. Beale, O. B. Jesness, T. W. Schultz, Virgil Salera, T. K. Cowden, and K. T. Wright.

developments, to present data on the extent of tariff and trade liberalization, and to point out specifically the ambiguous position which American agricultural policy has attained. Much of the conflict has developed by degrees as short-run problems of price support administration made certain trade procedures appear easy political alternatives. Unfortunately, the process largely ignored international trade and policy problems important to sound international political relations.

### *Our Export-Import Situation*

The gap in our balance of payments has plagued the United States since World War I. It has been accentuated during and

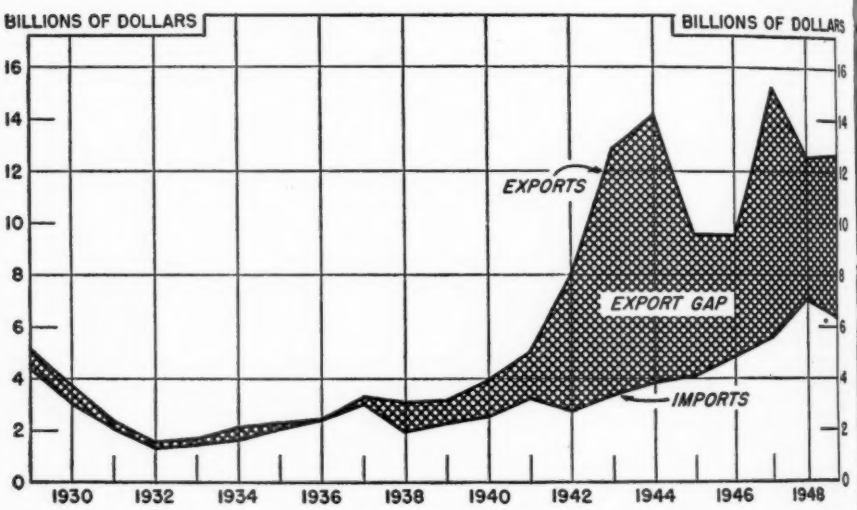


CHART I. Value of United States Imports and Exports of Goods and Services, 1929–1949.

after World War II. The gap of a half-billion to a billion dollars in the 'thirties was settled largely by gold imports. It has become a gap of six billion dollars and more. Since 1940, large unilateral payments by the United States have been utilized to settle the balance and to provide funds making larger exports possible. Lend-Lease, of course, was essentially a technique for helping our allies obtain war materials. Since then, UNRRA, Army Civilian Supply, and the ECA programs have provided large funds. The

British Loan, Export-Import Bank, Greek-Turkish Aid, International Bank, and International Refugee Organization have provided smaller grants and loans to fill the gap in our balance of payments.

Of our total agricultural exports of $20 billion since 1940 nearly $11 billion were specifically financed by the four major programs above, three-fourths of it since the end of the war (Table I).

TABLE I. UNITED STATES AGRICULTURAL EXPORTS SPECIFICALLY FINANCED BY STATED EXPORT PROGRAMS, JULY 1941, TO JUNE 1949.

| | *millions* |
|---|---|
| Lend-Lease* | $ 6,023 |
| United Nations Relief and Rehabilitation | 1,139 |
| Army Civilian Supply Program | 1,904 |
| European Cooperation Administration | 1,783 |
| Interim Aid, United States Foreign Relief, Greek-Turkish Aid, Int. Refugee Organization | 613 |
| Total | $11,462 |
| Other—Financed by imports, British Loan, sale of assets, gold, etc. | 9,196 |
| Total Financed Agricultural Exports, July 1941–June 1949 | $20,658 |

* Includes small amounts exported March to June 1941.
Source: Tabulation prepared by Office of Foreign Agricultural Relations.

Without the financing provided by these government programs, exports of both agricultural and industrial products would have been far smaller. These programs have served the economic functions which were performed by private banking loans after World War I; they supplied dollars to foreign countries with which goods could be purchased in the United States and sent abroad. What will happen as these programs are discontinued? Will new programs be developed? Will private investment move abroad in larger quantities? Will other developments in trade reduce the balance of payments problem? Or will foreign buyers be forced to curtail purchases in the United States until they match their sales to the United States? This is a problem of vital concern to agriculture and the nation.

The disequilibrium between imports and exports of goods and services is not a new problem—nor are its origins hidden. Changes in the international position of the United States from a debtor to a creditor nation, expansion and advances in efficiency of our industrial plant, our increased responsibilities during the last decades as we became the world's economic and political leader all have

TABLE II. DIFFERENCES BETWEEN IMPORTS AND EXPORTS OF GOODS AND SERVICES AND PRINCIPAL MEANS OF BALANCING PAYMENTS, 1920–1949
(IN MILLIONS OF DOLLARS)

| Year | Exports of goods & services | Imports of goods & services | Dollar gap | Principal way of balancing |
|---|---|---|---|---|
| 1920–24 | $ 6,432 | $ 4,672 | $ 1,760 | Private investment abroad, gold imports. |
| 1925–29 | 6,617 | 5,525 | 1,092 | Private investment abroad. |
| 1930–34 | 3,388 | 2,817 | 571 | Gold imports, short term international loans. |
| 1935–39 | 4,025 | 3,463 | 562 | Gold imports. |
| 1940 | 5,355 | 3,636 | 1,719 | Gold imports. |
| 1941 | 6,896 | 4,486 | 2,410 | Gold imports, Lend-Lease. |
| 1942 | 11,769 | 5,356 | 6,413 | Lend-Lease. |
| 1943 | 19,134 | 8,096 | 11,038 | Lend-Lease. |
| 1944 | 21,438 | 8,986 | 12,452 | Lend-Lease. |
| 1945 | 16,273 | 10,232 | 6,041 | Lend-Lease, Army Civilian Supply, UNRRA. |
| 1946 | 14,966 | 7,167 | 7,799 | UNRRA, Lend-Lease, British Loan, sale of foreign assets, Army Civilian Supply, Export-Import Bank, Surplus Property Credits. |
| 1947 | 19,741 | 8,463 | 11,278 | British Loan, Army Civilian Supply, Gold imports, sale of foreign assets. |
| 1948 | 16,791 | 10,481 | 6,310 | European Recovery Program, Army Civilian Supply, Gold imports. |
| 1949 Jan.–June | 8,619 | 5,049 | 3,570 | European Recovery Program, Army Civilian Supply. |

NOTE: Export and import data include not only merchandise, but also services such as interest on investment, freight and insurance charges, tourists' expenditures, electric power, etc. The column labelled "dollar gap" might also be considered a measure of the extent of a so-called favorable balance of trade (including visible and invisible items), but which unfortunately is not favorable for a creditor country such as ourselves.

Source: International Transactions of the United States during the War, 1940-45; Survey of Current Business; and official records, U. S. Department of Commerce.

been reviewed by others.[3] It is appropriate however, to present a brief picture of the size and extent of the present imbalance of our imports and exports. Table II shows the growth in volume of trade and portrays dramatically the increasing number and variety of devices used to keep an expanded flow of goods moving into foreign countries.

In spite of the many measures taken to provide dollars through grants and loans, many countries have found it necessary to limit

[3] See for example, Alvin Hansen, *America's Role In the World Economy*, W. W. Norton and Company, 1945.

the use of dollar exchange by directing its flow toward the items it considers most important. For a brief period after the war many countries relaxed their controls, but so great was the desire to purchase American goods and so great the disequilibrium in prices and supplies that the supply of exchange accumulated at the end of the war quickly was reduced and the long-run problem of how to pay for American products reasserted itself.

### *The Importance of Trade*

Our great diversity of climate and resources, and large area of virtually free trade means that most of our goods move to domestic markets. Even so, the United States economy is so large that our small percentage of international trade relative to our domestic economy is still larger than that of any other nation in the world. Our policies and our attitudes profoundly influence world trade policies.

Much of agriculture depends on the export market as an outlet for a significant part of total production. Wheat, rice, cotton, and

TABLE III. PERCENT U. S. EXPORTS AND IMPORTS ARE OF GROSS NATIONAL PRODUCTS, BY FIVE-YEAR PERIODS, 1920–48.

| Period | U. S. exports as percent of gross national product | U. S. imports as percent of gross national product |
|---|---|---|
| 1920–24 | 6.2 | 4.4 |
| 1925–29 | 5.1 | 4.4 |
| 1930–34 | 3.4 | 2.8 |
| 1935–39 | 3.5 | 3.0 |
| 1940–44 | 6.0 | 2.7 |
| 1945–48 | 6.0 | 2.7 |

SOURCE: Compiled from "Report of the ECA-Commerce Mission," The Economic Cooperation Administration, October 1949.

tobacco move in large quantities to export markets, as well as smaller percentages of a wide variety of other products. Of course, indirectly all of our economy is affected to some extent by increases or decreases in our volume of foreign trade.

In spite of our efforts to expand foreign trade since the passage of the Reciprocal Trade Agreements in 1934, imports are still a smaller percentage of gross national product than they were in either the 'twenties or 'thirties. See Table III. Imports are only 2.7 percent of our gross national product compared with 4.4 percent in the 'twenties. Exports have consistently been higher than our imports. We have not yet learned how to import! During a period

of rising national income, and especially with tariff rates being reduced, it would be expected that foreign goods would come in at a higher rate, since many imports are luxury items. However, imports as a ratio have not increased because: (1) Europe did not have the productive capacity to expand shipments rapidly and several other areas were unable to restore raw material shipments; (2) European costs and prices have been too high to compete with many lines of U. S. industry; (3) a number of trade barriers were

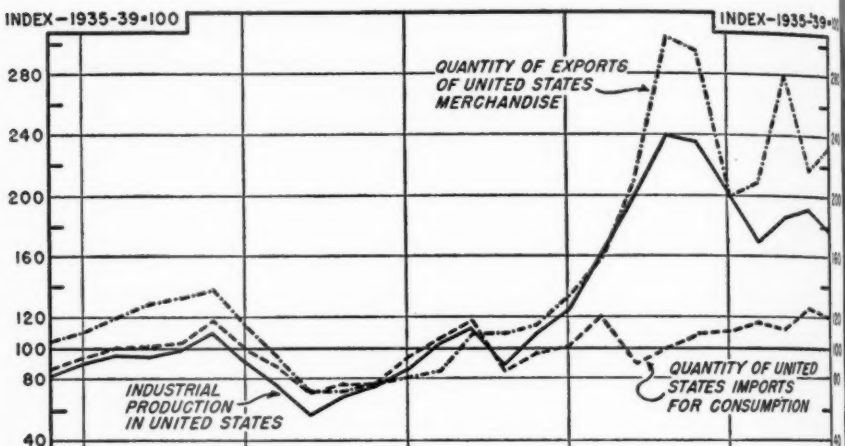


CHART II. Physical Volume of Merchandise Imports and Exports and of Industrial Production in the United States, 1924–1948

still extremely high; (4) the period of the 'thirties when shipments were low followed by the war made it difficult for manufacturers and exporters to keep in touch with markets and to produce the goods that United States citizens were willing to buy, and (5) in some cases, import quotas limited the amount which could enter this country.

Agricultural exports have been a declining percentage of our total exports as American industry developed mass production techniques and sold in markets all over the world. In 1925–29 agricultural exports were 38 percent of the total, dropping to 15 percent during the war and increasing to 27 percent in 1945–49 under the stimulus of U. S. grants. Agricultural imports have de-

TABLE IV. PERCENT AGRICULTURAL EXPORTS AND IMPORTS ARE OF TOTAL EXPORTS AND IMPORTS OF THE UNITED STATES, BY FIVE-YEAR PERIODS, 1920–49.

| Period | Percent agricultural exports are of total U. S. exports | Percent agricultural imports are of total U. S. imports |
|---|---|---|
| 1920–24 | 45.8 | 55.3 |
| 1925–29 | 38.4 | 52.9 |
| 1930–34 | 35.8 | 49.1 |
| 1935–39 | 26.4 | 51.0 |
| 1940–44 | 14.9 | 47.8 |
| 1945–49 | 27.6 | 45.2 |

SOURCE: Compiled from data published in "Foreign Agricultural Trade," May 1949, Office of Foreign Agricultural Relations, United States Department of Agriculture.

clined slightly varying from 53 to 45 percent of total imports in the same period. See Table IV.

### *Degree of Tariff Reduction*[4]

Tariff rates have been reduced periodically since 1934 under the authority granted in the Reciprocal Trade Agreements. Most of the early agreements were made on a bilateral basis. In the 1945 extension of the Act an amendment provided that tariffs could be reduced by 50 percent from the levels of January 1, 1945 rather than from 1934 levels as in the original law. With this new large area available for tariff negotiations, trade agreements have been made on a broader basis, primarily with groups of nations. The Geneva Trade Agreement in 1947, the Annecy Agreement in 1949, and the new series announced for the fall of 1950 are the major conferences. Tariff reductions have been generalized in accordance with the multilateral most favored nation clause of our commercial treaties.

Tariff rates have been cut approximately in half as a result of the Reciprocal Trade Agreements Program. Further, the increase in price levels has cut the average rate about as much more. Specific duties (10 cents per pound, or 40 cents per bushel, etc.) have been reduced as a percentage of value as price increased. Since nearly two-thirds of the United States tariffs are specific, rather substantial reductions have resulted. Of course, a lowering of the price

[4] A more comprehensive analysis of the tariff reductions and effects on trade may be found in Technical Bulletin 220, *Agriculture, Trade, and the Reciprocal Trade Agreements*, Michigan Agricultural Experiment Station.

level in the future would increase the effective tariff rate. Table V shows the levels of duties under various tariff laws. The widest range for any pair of years is from 59 percent in 1932 to 14 percent in 1948 and 1949.

Tariffs have been reduced for nearly 90 percent of our dutiable imports, with an additional five percent entering into agreements with duties bound against increase. It should be remembered that nearly two-thirds of our imports enter free of duty. Duties were reduced by 45 percent or more in 70 percent of the cases of duty reduction. A comparison of average tariff reductions for agricultural and non-agricultural imports is shown in Table VI. This table is based on (weighted by) actual imports in 1947; similar conclusions

TABLE V. PERCENT AVERAGE TARIFF DUTIES WERE OF VALUE OF DUTIABLE AND TOTAL IMPORTS, AND PERCENT OF IMPORTS INTO THE UNITED STATES THAT WERE DUTY-FREE, UNDER SPECIFIED TARIFF ACTS, 1910–1949.*

| | Equivalent ad valorum rates on: | | Percent of imports Duty-free |
|---|---|---|---|
| | Dutiable imports | All imports | |
| Payne-Aldrich Law | | | |
| 1910–13 | 40.8 | 19.3 | 52.6 |
| Underwood Law | | | |
| 1914–18 | 30.5 | 9.8 | 67.9 |
| 1919–22 | 24.8 | 9.0 | 63.7 |
| Fordney-McCumber Law | | | |
| 1923–30 | 38.5 | 14.0 | 63.8 |
| Hawley-Smoot Law | | | |
| 1931–34 | 51.4 | 17.8 | 65.3 |
| 1935–39 | 39.2 | 15.9 | 59.3 |
| 1940–44 | 33.3 | 11.5 | 65.5 |
| 1945–49 | 19.8 | 7.7 | 61.2 |

* Fiscal years 1910–18; calendar years, 1919 to date. Data for 1949 available only for period January 1–June 30.

SOURCE: Statistical Division, United States Tariff Commission. Ad valorum rates are the percent the tariff collected is of foreign value.

can be drawn from 1939 data. It shows that tariff reductions have been 48 percent for agricultural and 53 percent for non-agricultural imports. Tariffs have been reduced virtually the same amount in the two categories. More detailed analysis shows that this essential equality runs through other sub-categories of agricultural and non-agricultural imports. In other words, the Department of State has been very skillful in making approximately equal concessions for various groups. Nevertheless, substantial tariff reductions have been made for a large part of our dutiable imports.

There are certain limitations on the interpretation of these data. First, a tariff may be so high that it completely bars the import of the product. If so, this tariff would not be involved in the calculation of average tariff rates since no tariff is paid, while another and lower tariff may hinder, but not bar imports and will be included in the calculation. In the same way, a high tariff on an export prod-

TABLE VI. AVERAGE RATES OF DUTY ON UNITED STATES DUTIABLE AGRICULTURAL AND NON-AGRICULTURAL IMPORTS, BEFORE ANY TARIFF REDUCTIONS, WITH REDUCTIONS IN EFFECT ON JANUARY 1, 1949, AND ACTUAL RATES, BASED ON 1947 IMPORT STATISTICS.

| | Agricultural | Non-Agricultural | Total |
|---|---|---|---|
| | *million* | *million* | *million* |
| Total Dutiable Imports for Consumption | $1,056 | $1,156 | $2,212 |
| Actual 1947 ad valorum equivalents (based on 95 percent dutiable imports) | *percent* 20.8 | *percent* 17.5 | *percent* 19.1 |
| Average ad valorum rates of duties bound against increase | 8.4 | 10.9 | 10.1 |
| Average ad valorum rates based on 1947 imports for items with reduced duties: | | | |
| Assuming no tariff reductions | 31.6 | 28.3 | 29.9 |
| Rates in effect January 1, 1949 | 16.3 | 13.4 | 14.8 |
| Percent tariff reduction | 48.0 | 53.0 | 50.0 |

SOURCE: "Effect of Trade Agreement Concessions on United States Tariff Levels Based on Imports in 1947," United States Tariff Commission, May, 1949.

uct may not be included because it is of no significance except in cases of a short crop, a prolonged strike or a sudden increase in demand. Finally, a third limitation on the interpretation of the tariff stems from the use of quotas. A quota may limit imports far more than a tariff, yet it cannot be calculated quantitatively in the same way as average tariff rates. This particularly affects the comparison of agricultural and non-agricultural average tariff rates, since most of the quotas are applied to agricultural products. However, customs procedures may be so complex for some manufactured products that they appear to be additional restrictions.

### *Tariff Concessions by Other Countries*

The other part of the trade agreements of course, are the concessions made by foreign countries for items which the United States is exporting. A summary is shown in Table VII. Nearly two-thirds of the United States' exports of agricultural commodities are shipped to countries making tariff or trade concessions on these

commodities compared with only 40 percent for non-agricultural commodities. The concessions received vary from tariff reductions or larger quotas to bindings on the free list. Foreign countries were not limited to a 50 percent tariff reduction as was the United States; 14 percent of the foreign concessions involved the total elimination of the duty. However, one-fourth of the duty reductions were less than 25 percent and 30 percent were reductions

TABLE VII. UNITED STATES' EXPORTS, AND FOREIGN COUNTRIES' IMPORTS FROM THE UNITED STATES OF CONCESSION ITEMS, BY AGRICULTURAL AND NON-AGRICULTURAL COMMODITIES, 1939.

| Item | Non-Agricultural commodities | Agricultural commodities | All commodities |
|---|---|---|---|
| | (In thousands of dollars) | | |
| United States' exports | 2,468,256 | 655,086 | 3,123,342 |
| Foreign countries' imports from the United States of concession items[a] | | | |
| Amount | 1,009,731[b] | 430,244[b] | 1,498,090 |
| Percent of United States' exports | 40.9% | 65.7% | 48.0% |

[a] Upon the basis of all trade agreements in effect January 1, 1949.

[b] The sum of the agricultural and non-agricultural commodities here given is not quite equal to the imports from the United States of all commodities on which commitments were made, from Part IV of "Operation of the Trade Agreements Program, June 1934 to April 1948" (page 18). The difference (about four percent) arises from corrections in the total which were not carried out in the work sheets from which the breakdown between agricultural and non-agricultural commodities was made.

SOURCE: Information made available by United States Tariff Commission.

of 25 to 36 percent in the tariff duties.[5] In short, concessions by other countries have actually favored the export of agricultural products.

### *Effect of Tariff Reductions on Trade*

The net effect on the volume of international trade is difficult to measure. Unilateral grants of the United States have been far more important than tariff reductions abroad or at home in stimulating exports. For reasons developed earlier, exports of all kinds have increased substantially while imports have increased only at about the same rate as gross national product.

Changes in trade are of interest to agriculture in another respect. Many agricultural imports are non-competitive, including such items as coffee, rubber, cacao, raw silk, carpet wools, bananas,

[5] Operation of the Trade Agreements Program, Part IV, United States Tariff Commission, 1949, page 23.

etc. These are frequently referred to as complementary agricultural imports and usually are on the free list. Other agricultural imports are competitive or supplementary, including sugar, wool, hides and skins, cattle, dairy products, tobacco, coconut oil, etc. Have trade agreements expanded the proportion of the latter compared to the former? One would expect that an effective program of lowering tariffs would have increased competitive imports. Yet, as shown in Table VIII, non-competitive imports have actually increased slightly more than competitive imports. The development of quotas for agricultural products (see below) probably explains why there has not been a greater increase. A higher quota for butter, wheat, or Cuban sugar exports to the United States in 1948 would have equalized or partly reversed the situation and, of course, some of the restrictions were designed to help channel food into areas other than the United States. Price support operations in potatoes, wheat, and cotton, would probably have brought in

TABLE VIII. CHANGE IN TOTAL VALUE OF UNITED STATES COMPETITIVE AND NON-COMPETITIVE AGRICULTURAL IMPORTS FROM 1934–35 TO 1938–39 AND 1947–48.

| | Average value | | | Percent increase | |
|---|---|---|---|---|---|
| | 1934–35 | 1938–39 | 1947–48 | 1934–35 to 1938–39 | 1934–35 to 1947–48 |
| | (millions of dollars) | | | (Percent) | |
| Competitive agricultural imports | 501 | 502 | 1,512 | * | 202 |
| Non-competitive agricultural imports | 446 | 535 | 1,443 | 20 | 224 |
| Total, all agricultural imports | 947 | 1,037 | 2,955 | 10 | 212 |

* Less than one-half of one percent.

NOTE: Prices of all imports increased 138 percent from 1934 to 1948.

SOURCE: "Foreign Agricultural Trade," May 1949, Office of Foreign Agricultural Relations, United States Department of Agriculture.

additional supplies from other countries, had quota provisions not been imposed. Be that as it may, the combined effect of the trade program followed has *not* brought in any disproportionate amount of competitive agricultural imports.

### *Summary Comparison of Agricultural and Non-Agricultural Tariff Reductions*

As a whole, these data suggest that United States agricultural tariffs have been *reduced approximately the same amount from the levels prevailing in 1934* as were non-agricultural tariffs. Prices in

1934 were so low and tariff levels were so high that many of them completely prohibited the importation of foreign goods, both agricultural and non-agricultural. It is not possible from these data to say whether tariff rates in 1934 were relatively higher or lower for agricultural than for non-agricultural products. It could be argued and examples cited showing that industrial tariffs were relatively higher at that time and should have been reduced more. The reverse argument could also be used. To determine the truth of the matter would require very extensive studies, item by item, of our very complicated tariff schedule. However, two other factors limit the conclusions that can be drawn from the above data.

Industrial products are more complicated than most agricultural products. The tariff classification is more minute. Coffee is coffee, but a watch is many things depending on size and number of jewels, each with a given duty. An earthen ashtray may be variously classified as a common earthenware article (10 percent duty), a smoking requisite (30 percent duty) or as luxury earthenware (50 percent duty). If there is any question the highest rate applies. Few agricultural products meet these difficulties, so that administrative decisions by the customs authorities adverse to the importers may discourage imports of non-agricultural products more than agricultural. Each article must be stamped "made in France, Holland, Japan, etc.," including such things as bricks so as to distinguish it from American-made goods. Furthermore, since most industrial items are trademarked and sold in competition with other trademarked goods, a sales organization of some sort is usually necessary in the United States. There are few opportunities to contact dealers in industrial products in the same way as in staple products, such as a coffee roaster, a flour miller, or a butter merchant. For these various reasons, sizeable sales over a period of time must be expected before a foreign manufacturer will attempt to make arrangements to compete in the United States market. Circumstances such as these may mean that even a 50 percent tariff reduction in a non-agricultural item is not sufficient to encourage any material increase in imports. Most agricultural products are not affected seriously by these considerations.[6] It should be added that efforts are now underway to clarify and streamline customs

[6] Report of the ECA-Commerce Mission, The Economic Cooperation Administration, October, 1949 presents well the objections of a number of European exporters to our customs procedures and marketing organization.

procedure to facilitate imports.[7] Some improvements have already been made. Agriculture and the general public have much to gain and little to lose from such action.

Another limitation on the interpretation of the above data stems from the use of import quotas and licenses. These will be discussed in more detail below. However, in a number of cases tariffs have been reduced, but before imports increased substantially import quotas or licenses were imposed limiting or embargoing imports. This obviously has the effect of *increasing* tariffs to a prohibitive level at least after the quota is filled and is completely contrary to the goals sought in the Trade Agreements Program. Nearly all of these apply on agricultural products. Sugar has probably been the most important example.

In attempting to balance the total effect of the trade program it is difficult to say whether the total trade concessions and changes add up to equal or unequal concessions for agricultural and non-agricultural groups, particularly since this disorganized world is yet unable to take full advantage of such trade concessions as have been made. As Europe and the Far East recover, both agriculture and industry in the United States will feel far greater effects on both their domestic and foreign markets as increased production abroad drives for available markets.

### *Quotas, Exchange Controls, and Import Licenses*

Americans have become quite aware of the various non-tariff restrictions to trade in foreign countries. They are generally less aware of their use in the United States. Exchange controls are not used and are unnecessary because the dollar is the prize currency in today's world. Since 1939, the United States has made increasing use of quotas and import licenses and we have one case of a mixing regulation. Non-tariff restrictions may be separated into the following groups:

1) Tariff quotas where the tariff is reduced, but only for a specified quantity of import, after which the old tariff rate applies. Any amount may come in at the higher level. Cattle, milk, cream, butter, walnuts, white potatoes, and fillets of fish are included under this provision. This, of course, is a partial reduction in duty.

2) Import quotas under section 22 of the Agricultural Adjustment Act (as amended in the Agricultural Act of 1948). Under this provision an im-

[7] A draft bill designed to streamline customs procedure was presented to Congress by the Treasury on April 28.

port fee not to exceed 50 percent ad valorum or an import quota not less than 50 percent of imports during a representative period may be applied *if* imports tend to or threaten to interfere with the operation of a loan, purchase, or other program of the Department of Agriculture. Wheat and flour, various staple lengths of cotton and cotton card strips all are under quota. This provision appears to be in conflict with provisions of GATT (General Agreement on Tariffs and Trade at Geneva, Switzerland), but could be used until the Agreement is made fully effective.

3) Import quotas for sugar are authorized and applied under the provisions of the Sugar Act of 1948.

4) Certain quotas were assigned to the Republic of the Philippines under the Philippines Independence Act. These include hard fiber cordage, sugar, rice, cigars, tobacco, pearl or shell buttons, and coconut oil. Over the next quarter century these quotas are gradually reduced, eventually moving the Philippine Republic from a privileged position to the same status as other foreign countries.

5) Mixing regulations have been imposed under the Rubber Act of 1948.

6) Import licenses are required under Public Law 155, 81st Congress, providing import controls for all fats and oils (including butter) and rice and rice products. These have even been extended to soap and soap powder, rice starch and peanut butter. These permit the use of import licenses (a) if the products are in short world supply or (b) to provide orderly liquidation of "temporary" surpluses owned or controlled by the Government. Action under this provision has amounted to an absolute embargo on imports.

7) For a number of items, such as potatoes, poultry, and apples, informal negotiations between the United States and Canada have resulted in Canada agreeing to limit the granting of export licenses so that sales in the United States market would be moderate. Canada thus agreed to limit the extent to which her citizens could take advantage of prices higher in the United States than in Canada. If she had not agreed, the United States could have proceeded unilaterally under section 22 of the Agricultural Adjustment Act. (Item 2 above.)

### *Conflicts in Price and Trade Policies*

Legislation referred to above, Public Law 155, 81st Congress, permits the Department of Agriculture to apply import licenses to certain products in order to protect the government investment in surplus stocks. While the legislation covers the period July 1, 1949 to June 30, 1950, primarily to protect the public investment in flaxseed, it is now being used for butter, other fats and oils, and rice. It might be extended in the future to protect other government stockpiles. Similarly, we have provision for encouraging the export of agricultural products which otherwise might move to foreign markets with difficulty. A portion of customs receipts, and Com-

modity Credit funds can be used for these purposes if the administrators so decide. The Economic Cooperation Administration has been under considerable pressure to do the same thing. The Department of Agriculture set up a special program of the Commodity Credit Corporation on January 18, 1950 specifically to dispose of government surpluses in designated foreign markets.

Both the import control and the export dumping programs are related to the domestic price problems of agriculture. If through government action, agricultural products in the United States are priced above the international level, freight and other costs considered, then there is a disposition on the part of the respective administrators, congressmen, and others to utilize export subsidies or import controls to reduce their problems by selling surpluses abroad or limiting imports. The results are shown in the variety of laws and administrative devices just listed. In many of the instances where import or export controls are or may be used they are in conformity with certain escape clauses in GATT, although contrary to the over-all spirit of the agreement. Serious questions will arise in the future as these are used. Foreign nations will inquire whether we mean or do not mean the over-all trade policy formulated by our government and represented by the proposed International Trade Organization. They may counter with restrictions of their own. Wool is one of the commodities where the present conflict is more apparent but the problem now exists for potatoes, eggs, wheat, and fats and oils as well. Pork and lard may be an item by the time this appears. The pronounced tendency to raise the level of supports as shown by recent legislation will make the conflict appear in a greater number of agricultural products.

The price policy for American agriculture has serious implications for our international trade and political relations. If we permit our domestic program to force us into a series of exceptions to our over-all trade policy then non-agricultural interests may also protest and obtain similar exceptions in their behalf as foreign imports impinge on their business, and more important, our foreign customers will have neither the income nor the incentive to refrain from discriminatory treatment of our export products.

Much of the conflict between the agricultural price program and the international trade program revolves around the methods used to obtain the goals of the several programs. Different methods of implementing agricultural programs have been suggested which

would reduce the operational conflict. The essential feature is a pricing policy, usually involving direct payments, which would remove the wedge which has been driven between domestic and foreign prices.[8] Other means of attaining the ultimate income objectives of the agricultural program are possible, which would free the price system for its traditional role, that of providing some guide posts for efficient resource allocation. Actually, we are sliding into policy by default via short-run administrative decisions as surpluses or imports threaten to disturb the functioning of a government loan or purchase program. Meanwhile, programs such as the International Commodity Clearing House, which at least offers to legalize international dumping, are turned down rather summarily.

There is real danger that conflict in operational procedures of the agricultural price programs with the international economic position and policy of the United States, will lead us into reciprocal raising of trade barriers, this time primarily of a non-tariff nature. Serious thought needs to be directed to ways of minimizing these conflicts through different techniques of implementing the programs or by shifts in objectives. It is not a problem of free trade versus price supports, but one of how to attain greater stability of agricultural income and still contribute to better world economic relations and world peace.

### *Summary*

From the material presented in this article a number of summary statements are apparent. First, substantial reductions have been made in United States tariffs assessed against nearly all import items. The reduction in duties have been about the same for agricultural and non-agricultural products. Non-tariff restrictions including quotas, licenses, cumbersome customs procedures or the difficulty of establishing low cost sales outlets in the United States are now more important than the tariff in limiting greater imports of goods.

The recent large volume of United States exports have been possible only because of the large unilateral grants and loans by the United States. Readjustment of the balance of payments is difficult either via imports or via other techniques. Imports of

[8] For a fuller discussion of this conflict see C. Addison Hickman, *Our Farm Program and Foreign Trade*, Council on Foreign Relations, 1949.

many agricultural products are limited by non-tariff restrictions of various kinds, developing largely during or after World War II. These various restrictions are listed in the paper. Many have resulted directly from the complications arising as high support prices for agricultural products impinged on the trade program.

In attempting to reduce the conflicts between trade and price policies and in adjusting the balance of payments, attention needs to be directed on the agricultural side toward shifts in the form and/or level of price supports for agricultural products, and on the industrial side to streamlining customs procedures and providing a more efficient distribution system. In addition, the movement of long-time private and public capital investment is needed to help reduce the pressure on the balance of payments.

The problem of conflicting trade and agricultural price policy is extremely serious. Unless the conflict can be reconciled, increasing economic pressures in the future are likely to reduce the foreign market for agricultural export commodities, decrease the welfare of all of us as consumers, and most important, lead to serious international political and trade conflicts.

# REDUCING PRICE VARIABILITY CONFRONTING PRIMARY PRODUCERS*

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IF GREATER price and income stability for primary producers were considered the only policy objective,[1] we could appraise each proposal for reducing instability solely in terms of the extent to which it accomplished the objective. We would need to concern ourselves only with what is possible. However, minimum instability is not the sole objective. What is possible, including what has to be sacrificed in order to achieve greater stability, is only a part of the data for the problem. We must also know what the rates of substitution between objectives are for the community. For example, how are the gains in stability to be compared with losses in resource efficiency? Can an increase in stability resulting from a change in the distribution of income be justified? Should greater stability for agriculture be achieved at the expense of increased instability in the rest of economy? These questions indicate some of the elements that need to be considered.

Needless to say, we do not know the community's preference function so we could not determine the rates of substitution between such variables as stability in agriculture, stability in the rest of the economy, size of product, and the desired income distribution. In certain instances, no problem will arise as a result of this lack of information, since greater stability in agriculture may be achieved without sacrifice of these other objectives. In this analysis, we have adopted the following criterion as the basis for our appraisals: the program must contribute to income or price stability

* This is a somewhat condensed version of a paper presented at a joint meeting of the American Economic Association and the American Farm Economic Association in New York, December 29, 1949. The comments and criticisms of T. W. Schultz were useful in preparing this paper.

[1] The degree of instability in a variable might be defined in terms of the distribution of yearly deviations from the trend of the movement of the variable over time. This definition may not conform to definitions previously offered (by A. G. B. Fisher and David McCorid Wright, for example) largely because these definitions have been of "workable stability"—a concept involving both what is possible and what is preferred. Thus, employing our definition, the best of possible worlds would certainly contain some instability—individual prices and incomes being permitted to change and aggregates (such as the general level of expenditure upon farm products) being permitted to change within limits. The important problem is to define these limits of permissible change.

in agriculture and must be favorable or at least neutral in its effects upon the stability of the rest of the economy and upon resource efficiency. Using this criterion means that many policies cannot be ordered. If one had more information relating to the preferences of the community, a more powerful criterion could be used, since the gains from increased stability in agriculture could be compared with the losses imposed by inferior resource use (including the resource cost of administering the program) and reduced stability in the rest of the economy.

Some spokesmen for agriculture have argued that income variations in agriculture cause income variations in the rest of the economy; i.e., that instead of sacrificing some stability in the rest of the economy in order to obtain greater stability in agriculture, stability in the two parts of the economy are complementary. The Secretary of Agriculture, Mr. Brannan, has argued for a high and stable level of farm prices, supported by government action (if necessary) on the following ground (among others):[2]

*It can help prevent depression.*—Most depressions have been farm-led and farm-fed. Farm prices traditionally go down before, faster and, farther than other prices. On the down swing of the business cycle, farm people are the major early victims of a squeeze. As their income and, therefore, purchasing power is cut by low prices or production failure, industrial producers find a contracting market for their production. This throws workers out of jobs. They in turn spend less for farm products, which in turn forces down farm prices, and farm purchasing power is further cut.

I don't mean to say that declines in farm prices are the sole cause of depressions, but they certainly contribute greatly and would do so more now than in the past because agriculture has become a bigger customer of industry.

A much less sophisticated argument of which the following is an example[3] is frequently presented:

Unless Congress recognizes the simple fact that each $1 of gross farm income generates $7 of national income, theory and legislation resulting from theories can easily legislate the United States into bankruptcy and chaos. On the other hand, if Congress will use it as a yardstick, there is no reason why the United States should ever have a depression.

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[2] See *Agricultural Adjustment Act of 1949, Hearings*, Subcommittee of the Committee on Agriculture and Forestry, U. S. Senate, Eighty-First Congress, First Session on S. 1882 and S. 1971, pp. 31–2.

[3] Testimony by Carl H. Wilken, *1949 Extension of the Reciprocal Trade Agreements Act, Hearings*, Committee on Ways and Means, House of Representatives, Eighty-First Congress, First Session on H. R. 1211, p. 377.

If it can be demonstrated that income variations in agriculture cause income fluctuations in the rest of the economy and that stability in both sectors is desired, there is definitely a case for taking special action to reduce instability in agriculture providing that resource allocation is not adversely affected. Even though total product were reduced as a result of inferior resource allocation, there is some reduction in product which could be compensated for by the increased stability. However, if instability in agriculture has no effects upon the rest of the economy, special stabilization measures must rest upon any net gains that may accrue within agriculture.

Because assertions relating to the effects of income instability in agriculture upon income instability in the rest of the economy have been somewhat confused by the absence of an adequate description of the economic theory upon which a given set of assertions is based, we have devoted the first main part of this paper to a description of the effects of certain kinds of income variations in agriculture upon income in the rest of the economy under conditions specified in a few relatively simple economic models. The second part of the paper is concerned with appraising various special stabilization proposals subject to the criterion previously set forth.

## I

*Model I: Farm Income Dependent Only upon National Income.*

Imagine an economy in which the equilibrium level of expenditure upon agricultural products is dependent only upon national income. This could be the situation if the price-elasticity of demand for agricultural products were equal to one. Assume further that the marginal propensity to spend upon farm and non-farm products (by farmers and non-farmers) is less than one, but that there are autonomous components in aggregate demand for all goods and services so that the equilibrium level of income—that level at which income is equal to expenditure—is not zero. In such an economy, the level of farm income would be completely "national income-determined," the autonomous components of aggregate demand together with the marginal propensities to spend being the income-determining elements. Shifts in these elements could alter the equilibrium levels of farm and national income, but these shifts need not be systematically related to anything taking place

within agriculture. With a given marginal propensity to spend upon farm products and zero expenditure upon farm products at zero income, expenditures on farm products would constitute a fixed percentage of non-farm income, their absolute level changing as the autonomous elements changed.[4] This model, unrealistic though it might be, would appear to explain the facts which underlie the "seven to one" theory expounded by certain agricultural fundamentalists. If expenditure on farm products is not zero at zero income, the ratio of farm to total income as well as the absolute level of farm income would change as national income changed.

*Model II: Farm Income Is National Income-Determining.*

At the opposite pole from the model just presented in which agricultural income was wholly endogenous (national income-determined), is one in which agricultural income is strictly exogenous, national income or variables related to it not entering into the equation describing farm income. In such a model, farm income is national income-determining. If other exogenous elements did not change to offset the change in farm income, national income would change as farm income changed. However, if the other exogenous components of aggregate demand did not change, the ratio of national income to farm income would *not* remain constant

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[4] Assuming linear relationships, this model can be described algebraically as follows:

$Y_1$=non-farm income; $E_1$=expenditure on non-farm products.
$Y_2$=farm income; $E_2$=expenditure on farm products.

(1) $Y$=national income=$Y_1+Y_2$; $E$=national expenditure=$E_1+E_2$.

(2) $E_1=\alpha_0+\alpha_1 Y$. $\alpha_0$ is the autonomous component of expenditure on non-farm products, e.g., the autonomous component of consumer expenditure upon non-farm goods and services+the autonomous component of private investment +that part of the government expenditure upon non-farm goods and services which is independent of national income+the autonomous component of the non-farm export surplus. $\alpha_1$ is the marginal propensity to spend (out of income) upon non-farm products, this marginal propensity being assumed the same for farmers as for non-farmers.

(3) $E_2=\beta_1 Y$, $\beta_1$ being the marginal propensity to spend upon farm products. The equilibrium level of national income is defined as that level at which it is equal to total expenditure, $E$. Substituting (2) and (3) in (1) we have:

$$(4)\ \overline{Y}=\frac{\alpha_0}{1-\alpha_1-\beta_1}.$$

Changes in $\alpha_0$, $\alpha_1$, or $\beta_1$ would alter $E_2$. If the supply of farm products is not fixed or if the demand for farm products does not have a price-elasticity of unity, equation (3) will also contain the supply of farm products as a variable (see footnote 6).

as farm income changed.[5] A theory claiming that stabilizing farm income would stabilize national income and relying upon historical evidence of the constancy of this ratio would have to explain why these other exogenous elements shifted as farm income shifted and would thereby invalidate its own basic assumption unless it was able to show that these other elements were not truly exogenous but depended upon farm income. Foreign demand and the budget deficits or surpluses of the federal government could hardly be claimed to be related only to farm income.

*Model III: Total Expenditure on Farm Products Dependent upon Non-Farm Income and Exogenously Determined Supply of Farm Products.*

Modification of the first model to take into consideration changes in agricultural output resulting from such factors as weather variations, insect damage, disease and other factors introducing variability into crop and livestock outputs from a given collection of resources can be accomplished by introducing the price elasticity of demand for farm products as a factor in determining expenditures upon farm products. If this elasticity is other than one, farm income cannot be wholly determined by national income.

Empirical analyses of the price-elasticity of demand for farm products estimate this elasticity of demand as being relatively small (perhaps 0.2 to 0.4), within the range observed. Consequently with a given national income, a rise in the physical output of farm products would reduce gross farm income.[6] Farm output, in the aggregate, however, is notoriously stable. The largest recorded year to year change in the volume of agricultural production for sale and for consumption in the farm home for the period 1910 to date was 12.5 percent. Two other changes were approximately

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[5] Employing the same notation as in footnote 4, equations (1) and (2) are identical with those of the previous model, but equation (3) becomes: $Y_2=(Y_2)_0$, expenditure on farm products being autonomously determined. Hence, $\overline{Y}=\frac{\alpha_0+(Y_2)_0}{1-\alpha_1}$. However, $\overline{Y}/(Y_2)_0$ is not a constant unless $\alpha_0=0$ since $\frac{\overline{Y}}{(Y_2)_0}=\frac{1}{1-\alpha_1}+\frac{\alpha_0}{(Y_2)_0(1-\alpha_1)}$.

[6] Assume the price elasticity of demand for farm products is less than one. Equation (3) in the previous model could then be replaced by:
$Y_2=\beta_1 Y-\beta_2 S$, where $S$ is the supply of farm products, exogenously determined, and $\beta_2>0$.

10 percent.[7] More than 90 percent of the year to year changes were less than five percent. Furthermore, there is no discernible relation between production and prices and thus between production and cash farm income. Since cash farm income is highly correlated with farm prices, changes in demand appear to be much more important than changes in supply in determining changes in farm prices and hence in farm income.

Even if it were established that farm income is not wholly determined by national income, this does not mean that a change in farm income resulting from a change in the size of the harvest will cause a change in non-farm income. Farmers' expenditures for non-farm goods and services will change, if their expenditures are related to their incomes. But, non-farm expenditures for non-farm products may change equivalently in the opposite direction. Assume, for example, that an increase in total farm output reduced aggregate expenditure on farm products, aggregate farm income and farmers' expenditures on non-farm products. Purchasers of farm products, having more of their incomes to spend on other goods and services, would be expected to increase their expenditures on non-farm products. Assuming that the *aggregate expenditures* (on farm or non-farm products) of the non-farm sector of the economy were dependent only upon non-farm income and the price of farm products, and assuming the farm and non-farm sectors of the economy are characterized by identical marginal propensities to spend for non-farm products out of income, the fall in farmers' expenditure on non-farm products would be equal to the increase in non-farm expenditure on non-farm products. A fall in farm income because of a change such as was assumed above would not result in a fall in non-farm income.

[7] The largest changes in farm output have not been coincidental with changes in non-farm business activity that would be consistent with the assumption that farm income is an important national income determining factor. The largest change was between 1936 and 1937 when an increase in output was associated with a rise in farm prices because of an increase in national income. This instance is evidence that factors other than changes in supplies of farm products which influenced national income were more important than changes in farm output. Farm output declined by 10 percent between 1920 and 1921. The trough of the cycle was in late 1921. Farm output rose by 10 percent between 1921 and 1922. Yet business activity improved. These instances are consistent with the conclusion that other exogenous factors were more important than changes in farm supplies in determining the change in non-farm income. Geoffrey H. Moore after a much more exhaustive study concludes as follows relative to this point, "specific cycles in crop harvests pursue their courses almost entirely free of the influence of business cycles." (Quoted in T. W. Schultz, "Economic Stability of American Agriculture," this *Journal*, Vol. 39, No. 4, pp. 820–1.)

If the marginal propensities to spend are not the same, a change in farm output, changing farm income, will result in a change in the equilibrium level of non-farm income. A higher marginal propensity to spend by the non-farm sector than by the farm sector would mean a rise in the equilibrium level of expenditure upon goods and services whenever there was a redistribution of income against agriculture. Or, if farmers had a higher marginal propensity to spend than did non-farmers, a fall in agricultural income as a result of a change in the supply of farm products would reduce the level of expenditure upon non-farm products.[8] This factor has been recognized by macro-economic theories in which the distribution of income as well as the level of income has been considered as an element determining the level of expenditure upon goods and services.

It is possible, of course, that the reaction of non-farm income receivers to a fall in farm prices would be to make a smaller addition to purchases of non-farm products than would have been made if farm prices had not fallen but there had been a rise in income because of an increase in one of the autonomous variables (such as the export surplus or the government deficit). This assumes that individuals consider various components of income differently, differentiating among these components on the basis of source. It

[8] Denote expenditures upon farm products by non-farmers as:

(1) $E_{2N}=\beta_1 Y_1-\lambda_1 S$, $\beta_1$ being the marginal propensity of non-farmers to spend upon farm products, $S$ the supply of farm products and $\lambda_1$ a coefficient depending upon the price-elasticity of demand for farm products.

Farmers' expenditure upon farm products will be:

(2) $E_{2F}=\beta_2 Y_2-\lambda_2 S$

Total expenditure upon farm products, and total gross farm income ($Y_2$) will be:

(3) $E_2=E_{2N}+E_{2F}=Y_2$

Non-farm expenditures upon non-farm products are assumed to be:

(4) $E_{1N}=\gamma_{N0}+\gamma_1(Y_1-\beta_1 Y_1+\lambda_1 S)$, non-farmers' expenditures upon farm products constituting a kind of "tax" which rises with income and falls as the supply of farm products increases. $\gamma_{N0}$ is the autonomous component which could include autonomous elements of business investment and net government outlays for goods and services.

Farmers' expenditure upon non-farm products are assumed to be similar to the relationship of non-farmers' expenditures on non-farm products:

(5) $E_{1F}=\gamma_{F0}+\gamma_2(Y_2-\beta_2 Y_2+\lambda_2 S)$

Total expenditures on non-farm products and hence non-farm income are:

(6) $E_1=E_{1N}+E_{1F}=Y_1$

Substituting equation (3) in (5) and solving for $Y_1$ yields:

$$(7)\quad \overline{Y}_1=\frac{\gamma_{N0}+\gamma_{F0}+\lambda_1 S(\gamma_1-\gamma_2)}{1-\gamma_1+\beta_1(\gamma_1-\gamma_2)}$$

$\gamma_1$ and $\gamma_2$ are less than 1 but greater than zero.

If the price elasticity of demand for farm products is $\gtreqless 1$, $\lambda_1 \gtreqless 0$.

would be equivalent to arguing that total expenditures upon goods and services is a function of relative prices alone, which does not seem to be a reasonable assumption.

One condition under which this conclusion that the non-farm sector is insulated from certain changes in income in the farm sector would not hold has already been indicated—namely, when the marginal propensities to spend of the two sectors upon non-farm products differ. Available evidence does not indicate that farmers have a marginal propensity to spend upon all products which differs from that of non-farmers. Although the marginal propensity of farmers to consume does seem to be lower than that of non-farmers, when total spending (consumption plus investment) as it is related to income is considered, no difference between farmers and non-farmers is apparent.[9]

Some variables in the level of non-farm income may be dependent upon national income (non-farm and farm income) in which case a fall in farm income would reduce non-farm incomes. Investment, in the aggregate, may be of this character. However, businesses selling to both farmers and non-farmers, assuming the income sensitivities[9a] of demand among both groups for these products were identical, would be unaffected by a fall in farm income. Basing investment decisions on factors which were unrelated to their profit positions would be irrational for such businesses. However, those firms which sold products for which the farmers' income sensitivity of demand exceeded the income sensitivity of non-farmers would suffer as a result of a fall in farm income and might decrease their investment somewhat. One could hardly argue that firms manufacturing and selling farm machinery or fertilizer or livestock feed would not suffer a fall in receipts as a result of a decrease in farm income.

In general, a fall in farm income resulting from a change in supplies of farm products will reduce the receipts of firms selling products which have higher income sensitivities for farmers than for non-farmers, while it will increase the receipts of firms selling products which have lower income sensitivities for farmers than for

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[9] See U.S.D.A., *Rural Family Spending and Saving in Wartime*, Misc. Pub. No. 520, 1943, tables 44, 45, and 48 and U. S. Department of Labor, *Family Spending and Saving in Wartime*, Bull. 822, 1945.

[9a] Denoting expenditure by $E$ and income by $Y$, an income sensitivity is defined as $(dE/dY) \cdot (Y/E)$.

non-farmers.[10] Thus, even though the aggregate propensity to spend were identical for farmers and non-farmers, a fall in farm income could reduce some elements of non-farm income. If resources were immobile between industries and had fixed supply prices, unemployment and reduced real output in the non-farm sector of the economy would be the result. This could be expected to create pessimistic expectations regarding the profitability of carrying through investments planned on the basis of higher levels of real income and reduce income in parts of the economy which did not sell to farmers.

The simple model outlined above may not be admitted as an adequate basis for analysis of the interrelationships between agricultural and non-agricultural income. It is a static model and does not permit incorporation of leads and lags in the relationships between variables. Even though equilibrium values do not change, the movement of some variables other than farm income over time may be oscillatory as a result of variations in expenditure on

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[10] Assume that the economy is divided into 3 parts:

Sector $N$, selling commodity 1 to all three parts; Sector $M$ selling commodity 3 only to Sector $F$ ($M$ is analogous to the farm machinery industry selling only to farmers); and Sector $F$ selling commodity 2 to $M$ and $N$. ($F$ could also sell within $F$, but to facilitate computation, $F$ is assumed to sell only to $M$ and $N$.) The following expenditure relations prevail:

(1) $E_{2N}=\beta_1 Y_1-\lambda_1 S$, $E_{2N}$ being sector N's expenditures on 2, $\beta_1$ the marginal propensity of the economic units in $N$ to spend upon commodity 2, $Y_1$, the income of sector $N$ and $S$ the supply of Commodity 2.

(2) $E_{2M}=\beta_2 Y_3-\lambda_3 S$, $E_{2M}$ being sector $M$'s expenditure on 2, $\beta_1$ the marginal propensity of the economic units in $M$ to spend upon commodity 2, and $Y_3$, the income of sector $M$.

(3) $E_2=E_{2N}+E_{2M}$, $E_2$ being total expenditure on commodity 2.

(4) $E_2=Y_2$, $Y_2$ being the income of sector $F$.

(5) $E_{1N}=\gamma_{N0}+\gamma_1(Y_1-\beta_1 Y_1+\lambda_1 S)$, $E_{1N}$ being the expenditures of sector $N$ on the products which it produces.

(6) $E_{1F}=\gamma_{F0}+\gamma_2(Y_2-\delta_{F0}-\delta_2 Y_2)$, $E_{2N}$ being the expenditures of sector $F$ on the products produced by sector $N$ (commodity 1), $\delta_{F0}+\delta_2 Y_2$ being the expenditures on the products of sector $M$ (see equation 9).

(7) $E_{1M}=\gamma_{M0}+\gamma_3(Y_3-\beta_3 Y_3+\lambda_3 S)$, $E_{1M}$ being the expenditures of sector $M$ on on commodity 1.

(8) $E_1=E_{1N}+E_{1F}+E_{1M}$

(9) $E_{3F}=\delta_{F0}+\delta_2 Y_2=E_3$, sector $F$'s purchases of commodity 3. Sector $M$ is assumed to be purchasing none of its product and selling none to sector N.

Solving for $Y_1$ yields an equation, the numerator of which contains the following terms in $S$:

$$\left[S\lambda_1(\gamma_1-\gamma_3)-\gamma_2(1-\delta_2)(\lambda_1+\lambda_3)\frac{1}{(1-\beta_3)}\right]$$

The expression in the brackets must be zero in order for $\partial E_1/\partial S$ to be zero. One case fulfilling this condition is when $\lambda_1$ and $\lambda_3$ are zero, i.e., when the elasticities of demand for farm products are unity.

agricultural products. However, if this were the case, stabilizing *farm income*—by payments to farmers or taxes levied against them—would not necessarily reduce the amplitude of the oscillations in a variable such as non-farm income. Stabilizing *supplies of farm products*—through storage for example—might eliminate such effects.

*Model IV: Demand for Farm Products Variable.*

Thus far our models have included only the effects of supply variations as a cause of the instability of farm prices and incomes. We reject supply variations of farm products as a major cause of income variability in the non-farm sector of the economy on two grounds. First, the supply variations that have occurred have not been large and in three instances of largest year-to-year variations, the behavior of the economy was not consistent with the hypothesis. Second, a theory claiming that changes in supplies of farm products drastically affected non-farm income, assuming farmers' and non-farmers' income sensitivities for various products were similar, would be inconsistent with other theories which appear to offer reasonable explanation of economic behavior.

Historically, the important fluctuations in farm incomes seem to be associated with changes in demand. Can farm income instability due to demand variations create instability in the non-farm sector of the economy?

Autonomous changes in demand can be due to several factors, of which export demand, inventory demand, and the total supply of other goods and services (and their conditions of availability) seem to be the most important. A change in net exports, if concentrated upon agricultural products will change the level of aggregate demand for non-farm products as well as for farm products. Farm income will change and part of the change will not be offset by equivalent changes in non-farm income. In other words, the change in consumer expenditure upon farm products will be less than the change in farm income. A rise in net exports will be inflationary and a decline will be deflationary. Changes in the autonomous component of the export surplus would affect total national income in the same fashion whether this surplus grew out of farm or non-farm exports. A change in the farm export surplus accompanied by an offsetting change in the non-farm export surplus would not affect non-farm income under the assump-

tions which have been made in this model, providing that the marginal propensities to spend in the two sectors of the economy—the farm and non-farm—are the same.

If farm income changes because of a shift in the domestic demand function for agricultural products, the changes in income and expenditure that result seem to be largely compensating. Most of the decline in farm prices and incomes since 1947 seems to be due to changes in demand. The demand for farm products has decreased; the demand for non-farm products has risen. Products for which farmers have a higher income sensitivity will suffer a decline in demand, but producers of products for which non-farmers have a higher income sensitivity would have an increased demand.

If demand changes because non-farm income changes, the change in farm income is not an exogenous element in determining national income. The large shifts in demand for farm products, 1929–32, 1937–38 and 1941–47, seem to have been of this nature.

*Model V: Business Expectations Related to Farm Commodity Prices*

If farm prices are in some sense considered as economic barometers by investors and other spending units, erratic fluctuations in farm prices could influence the level of non-farm incomes. Farm prices would be an important element influencing expectations and thus investment.

It is sometimes argued that the sharp decline in farm prices that occurred in February, 1948 would have resulted in a general decline in aggregate expenditure had not farm price supports halted the decline. If farm prices had continued their precipitous decline, expectations in the rest of the economy would have become so pessimistic as to create a serious depression.

The hypothesis implicit in the argument cannot be proven or rejected on the basis of the available evidence. It cannot even be shown, in the instance cited, that the existence of support prices was a factor halting the price decline since most farm prices did not decline to the support price level. Nor are the analytical suppositions underlying it entirely satisfactory. A satisfactory theory would need to indicate why farm prices change in this manner at times and why such changes in farm prices should have the specified effects upon expectations. As noted earlier, most, if not all, of the decline in farmers' expenditures will be offset by an increase in expenditures by non-farmers. Consequently, it

would seem to be somewhat irrational to base expectations upon a phenomenon that did not influence actual profits. But this does not prove that such a relationship does not exist.

## II

### *Special Stabilization Measures for Agriculture*

A few important policy implications can be drawn from our analysis of the relation between income variations in agriculture and in the rest of the economy. First, special stabilization measures, such as support prices, cannot be justified on the ground that farm income is national income determining. Second, special income transfers to agriculture are not warranted on the basis that farm people have different spending habits than non-farm people. Even if farm people had higher marginal propensities to spend than non-farm people, this would not be a reasonable ground for transferring income to farm people during a depression except perhaps in the special case in which a maximum of aggregate expenditures with given values for exogenous variables was the sole objective. It might be indicated that one result of such a policy would be to make the economy more vulnerable to fluctuations. Finally, special stabilization measures are not ruled out because farm income is not national income determining. Special measures can be justified on other grounds.

Since evidence seems to indicate that such instability in farm income as has occurred (because of factors peculiar to agriculture) does not lead to greater instability in the rest of the economy, we can appraise agricultural stabilization proposals primarily in terms of their effects upon resource allocation. Employing the previously stated criterion for evaluation, a stabilization measure will be considered desirable only if it increases stability within agriculture and does not adversely affect resource allocation.

Though there are differences in detail, the special stabilization measures for agriculture fall into a limited number of groups: (1) Price supports, (2) Depression income or price payments, (3) Commodity reserve, (4) Storage, and (5) Yield insurance.

### *A. Price Supports.*

The current agricultural price program involves the use of price supports to achieve stabilization in agriculture. Instability due to demand variation is reduced by not permitting prices to fall be-

low a specified level. Instability due to supply variations is reduced if the price-elasticity of demand is less than one-half. The program is in operation at all times, without regard to the level of economic activity. The program can and does result in income transfers to agriculture when resources are fully employed. The basis for the income transfer is not too clear, but it is evident that the transfer cannot be justified in terms of its stabilizing effect upon the rest of the economy.[11]

Even if production payments were used, a price support program of the same general type as the present would be unacceptable because of its effects on resource use. The production payments (or subsidies) would provide for the best use of output once produced, but the support prices and related production controls would not provide for the optimum output of agricultural products.

*B. Depression Income or Price Payments.*

Various proposals for depression income or price payments have been made. These proposals imply income transfers to agriculture only if general stabilization measures have been ineffective. Two assumptions are implicit in these proposals: (1) Once a downturn in economic activity has occurred, continued income declines in agriculture reinforce the cumulative decline in income and employment; (2) Incomes of farm people cannot be maintained by devices similar to those used in the rest of the economy, such as unemployment compensation and public works programs.

The first assumption is valid, though no more valid for agriculture than for any other area of economic activity. Whether the second assumption is valid depends upon the nature of the general stabilization program. If the transfer payment were a flat per capita payment to all members of the economy or a payment related to the decline in income during the depression, there would be no need for a special depression payments program for agriculture. However, if the transfer payments program were of an omnibus type, a special program for agriculture is acceptable. If unemployment compensation, consumption subsidies, investment aids, public works, securities price supports and subsidized credit, and

[11] A possible exception was noted in Section I, namely if investment expectations are related to changes in farm prices. If this relation existed and were important, price ceilings would be required to eliminate the effect of rising farm prices upon expectations.

housing subsidies, among others, are used, there is no reasonable argument against a special price or income payments to assure that agriculture is not discriminated against.

The basic problem here is the desirability of such an omnibus anticyclical program. No such program, consisting of so many discrete parts, can be devised that will not have certain undesirable effects upon resource use. Serious consideration must be given to anticyclical programs that will have minimum undesirable resource effects. A program of tax remissions and per capita subsidies with a stable level of government purchases of goods and services during the various phases of the business cycle seems more appropriate in an enterprise economy.

*C. Commodity Reserve Proposal.*

The basic feature of a commodity reserve proposal is the establishment of a "bundle" (a fixed unit) of commodities which will be purchased and sold at a fixed price by government. The contents or proportions of various commodities in the unit would remain fixed, at least over a considerable period of time. Whenever the market value of the unit fell below the fixed price, purchases automatically would be made by the Commodity Reserve Corporation (CRC). Whenever the value tended to rise above the fixed price, sales of the unit would be made and money accumulated (hoarded) by the CRC.

The commodities composing the unit would consist of raw materials and foods, essentially the products of primary producers. The objective of the commodity reserve proposal would be to stabilize the price of the unit, at least within a specified range. The relative prices of individual commodities within the unit would not be affected except indirectly. Relative prices would reflect changes in demand and supply conditions for the individual products.[12]

If a general price stabilization program were operating successfully, it does not appear that there would be a very significant task for the commodity reserve proposal to perform. During periods of general price stability, the average price of raw materials and food does not seem to vary much from year to year. Consequently a

[12] If expectations in the non-farm sector are related to sudden changes in farm prices, the commodity reserve would be an appropriate program to eliminate most of these effects. It would stabilize the average price level of a large group of "sensitive" commodities.

special stabilization device that does no more than stabilize a particular broad segment of the general price level hardly seems required.

Furthermore, the Commodity Reserve Corporation could create difficulties either for itself or for the program of general price stabilization by incorrectly fixing the price of the unit relative to all other prices. If the price is set too high, the CRC would accumulate stocks and add to the money stream. This could force deflation in other segments of the economy if general price stability is to be achieved. If the initial price of the unit is set too low, the commodity reserve proposal would not come into play, except sporadically, unless a deflation actually occurs in spite of efforts to achieve general price level stability.

The commodity reserve may also be considered as a major element of a monetary-fiscal policy. In this case, it presumably would not interfere with other measures to stabilize the general level of prices. But if the major objective of stabilization policy is to maintain employment at a high proportion of the total labor force, difficulties may arise because of monopoly action in the society. If factor prices rise more rapidly than technological change permits, either of two things will occur—unemployment or the exhaustion of the reserves of the CRC. The first will occur if there is no other important source of monetary expansion in the economy. The second will occur if monetary expansion by the banks or by deficit financing takes place. The only other possibility is for the Commodity Reserve Corporation to adjust the prices of the unit to the level necessary for employment maintenance. This discussion is not a criticism of the commodity reserve proposal as such. It merely indicates that the dual objectives of price stability and high level employment can be inconsistent in certain institutional settings.

*D. Storage*

If non-agricultural prices are stable, the prices of individual farm products will vary considerably from time to time. Consequently, even if a general stabilization program is in operation, certain elements of price instability will remain. In addition, the income of any individual farmer is related to the output actually realized from a given set of inputs. In certain agricultural areas, yield variation is fully as important as price variation in creating income instabil-

ity. This is particularly true in the Great Plains and Mountain areas where rainfall is a limiting factor in agricultural production.

A federal storage program has been advocated as a means of stabilizing the supply of durable farm products and thus their price under conditions of stable demand. Where the durable product is an input for another product, stabilizing the supply of the input will add stability to the output of the finished product assuming stable demand for this product. (If the price of the output fluctuates, stabilizing an input price may result in highly fluctuating output.)

A storage program of this sort stands on a rather different footing than other stabilization devices described above. It would affect prices only by reducing fluctuations in the sale or use of a product as these are related to output variations. The program would not envisage income transfers to agriculture, except as the administrative costs of the program are paid for out of general tax revenues. If the stored product were always placed on the regular market, any income gains to farmers would be due to the nature of the demand function.

The case for a public storage program rests solely upon certain presumed defects of storage operation when conducted by private individuals. If private individuals do not store enough to equalize the marginal gains and costs of storage, then society can improve its situation by collectively undertaking storage. There appear to be two main reasons why private individuals do not store enough durable farm products. First, the capital position of farmers and marketing agencies is inadequate. Second, farmers and marketing agencies holding assets in the form of goods are subject to an uncertainty that redistributes assets among individuals without changing their total real value to the economy as a whole. This uncertainty arises from changes in the general level of prices.

A public storage program designed to stabilize the salable supplies of durable farm products could not operate on the basis of a price criterion such as parity prices. Stocks should be increased when output is above the long term average level of output by enough to lower the price sufficient to compensate for holding stocks. The amount of increase in stocks would depend upon the marginal cost of storage, the nature of the demand function for the product and the expected distribution of yields (or output) in time.

The major objection to a public storage program is political

rather than economic and need not be considered here. The economic gains seem to be important although they might be outweighed by political considerations.

*E. Insurance of Yield or Output.*

The argument for crop insurance is related to farmers' need for aid in stabilizing their incomes against variations in yields on their individual farms. There are two alternatives to public action—accumulation and decumulation by farmers in accordance with changes in their income positions, or private insurance. Neither seems to have functioned adequately in the past. However, public insurance of crop yields has also been subject to serious defects in this country. These perhaps can be overcome and important suggestions for overcoming them have been made recently.[13]

## III

### *Conclusions*

In an enterprise economy, it is undesirable (if not impossible) to assure any important producing group complete stability. To do so would almost inevitably freeze the resource structure of the economy. In this paper we have suggested certain stabilization devices which are acceptable under certain assumptions. These include depression price or income payments to agriculture, public storage program and crop insurance. Under certain restricted conditions a commodity reserve may have merit, yet other means for stabilizing the general level of economic activity seem to be preferable.

To go beyond these proposals one has to introduce devices and measures which will seriously impair the allocation of resources, Assuming that the general level of economic activity is stabilized. the important remaining sources of instability in agriculture are changes in consumer expenditure patterns and sudden shifts in production techniques. To do anything about either will prevent shifts in resource use that are required if total output from given resources is to be maximized.

The general decline in farm incomes and prices that has occurred since 1947 is one that is due to a change in consumer expenditure

[13] See Harold G. Halcrow, "Actuarial Structures for Crop Insurance," this *Journal*, XXXI (August, 1949), pp. 418–443.

patterns. Exports of farm products have not declined and the consumption of farm products has been less in 1949 than it was in 1947 or 1946. Likewise the level of total consumer expenditure was as high or higher in 1949 than in 1947. The inference is that consumers now wish to expend a larger proportion of their income upon non-farm products than in 1947. If resource efficiency is given weight, then there is little or no basis for interfering with this decline in aggregate farm income.

## DISCUSSION: REDUCING PRICE VARIABILITY CONFRONTING PRIMARY PRODUCERS

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THE current political debate about farm-price supports often generates more heat than light. We urgently need the clear light of economic science, based upon objective, dispassionate analysis.

Mr. Brownlee and Mr. Johnson have attempted an analysis of a basic and difficult problem—the interrelationships between agricultural instability and general instability. They have used modern techniques of theoretical analysis. A study of the authors' theoretical models should help us to understand some of the relationships between agriculture and the rest of the economy.

But such a study alone is hardly adequate to support broad general conclusions, and recommendations. I do not believe that Brownlee and Johson's models alone are at all adequate to support their sweeping conclusion that national prosperity is unaffected by farm prosperity—that the rest of the economy is completely insulated from agriculture. Certainly they do not support their even more sweeping policy recommendations, including the junking of all farm-price supports, and the substitution of payments to everyone (farmers and non-farmers alike) in periods of depression.

The analytical part of the paper attempts to dispose of an ancient and honorable hypothesis: "If agriculture prospers the whole economy prospers."

I am told that an old German proverb has it this way:

"Hat der Bauer Geld,
Hat's die ganze Welt."

Recent attempts have been made to state the hypothesis quantitatively in the form (quoted by Brownlee and Johnson):

"Each dollar of gross farm income generates seven dollars of national income."

The authors not only reject the seven to one ratio, but claim to have disproved the whole hypothesis that non-farmers are affected at all by fluctuations in farm income. True they do at first qualify this conclusion a little, but they soon drop all qualifications, and proceed as if they had proved with finality that instability of farm income can never, to any degree, influence national income. What is the evidence for such an important conclusion?

The evidence, if any, is in a series of five models. The first three of these models are straw men that are knocked down by their own builders. Model V, which runs counter to the authors' conclusions, is admitted as a possibility only if businessmen are irrational. So I take it that the conclusions are based upon Model IV, in which the instability of farm income is assumed to be due to variations in the general level of demand in the economy as a whole.

In discussing Model IV, the authors state that "autonomous changes in demand can be due to several factors, of which export demand, inventory demand, and the total supply of other goods and services (and their conditions of availability) seem to be the most important." This is doubtless true. Other autonomous changes could have been mentioned— for example, investment in plant and equipment. This means only that we should not expect national income to depend solely upon farm income. But do the models, and the fancy words "exogenous" and "endogenous" demonstrate that because farm income is affected by national income, it cannot itself affect national income? Such an argument seems to me like some curious piece of metaphysics. Is it not like demonstrating that because the chicken must come before the egg, therefore the egg cannot come before the chicken? I don't understand such a demonstration, and I doubt the truth of the conclusion.

The interrelations of agricultural prosperity and general prosperity are doubtless complex and difficult. Theoretical models may help us to understand these interrelations. Brownlee and Johnson's Models IV and V give us a start, at least. To me their main defect is their over-simplicity. They are essentially static models, and do not get us very far toward analyzing the essentially dynamic problem of economic instability.

We need more realistic models, but we should not stop with theoretical models. We should use them to test facts. It is generally believed (and I am among the believers): first, that farm price supports in 1949 were effective in preventing a more serious collapse in farm incomes than did actually occur; and, second, that such a collapse would have added to the mild recessionary forces in the rest of the economy. Of course, I and thousands of others may be wrong in this belief. We certainly need careful and painstaking research to test such beliefs and to provide quantitative measures of the economic consequences of price-support programs. I suggest this as perhaps the most important research in the field of agricultural policy.

Competent economists and statisticians should be able, for example to narrow very substantially the area of disagreement as to the effects of specific price-support operations upon the actual levels of farm prices, farm incomes, and production. Probably, with further hard work on theoretical models and on statistical analysis we could make gradual progress in narrowing the area of disagreement concerning the effects on general income, demand, and prosperity.

We must remember that even the best research seldom, if ever, gives us a final and complete answer to the most basic issues of policy. No study of farm-price supports would warrant such pronouncements as Brownlee and Johnson's statement that "A general per capita subsidy" in times of depression is better than "an omnibus anticyclical program" such as that "envisaged by the Employment Act of 1946." There may be some merit in per capita subsidies—just as there is some merit in many other measures that are often offered as panaceas, such as manipulating the value of the dollar, Henry George's single tax on land, a compensatory public works program, and so on. But the economist who expects a theoretical model to provide a single panacea to all economic problems is only fooling himself.

Further research on this subject needs to dig deeper into the general problem of optimum use of resources. Some of our farm-price-support operations doubtless have interfered with needed adjustments. Probably the cotton-price support in 1949 was responsible for overplanting of cotton. But I am not satisfied with the assumption that economic programs and policies should be limited strictly to reducing fluctuations around a trend—that any effort to influence a trend necessarily involves the inefficient use of

resources. Our current legislation and our current programs may not be well-designed to accomplish the adjustments we need in agriculture. Research should be able to point out the changes needed to make them more effective for this purpose. But such research is hardly worthwhile if the economist starts with the assumption that any changes in trend resulting from any kind of price-support operations are to be condemned.

## DISCUSSION

HAROLD G. HALCROW
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A DYNAMIC setting is postulated for the long run stabilization of farmers' incomes where the maximization of national product requires a shift of human resources from primary to secondary and tertiary industries. Because of frictions in making these shifts the income of primary producers in a free market may be reduced below the level which is considered compatible with general welfare goals, which include notions of equity as well as national self interest. If this is the case, the problem to be faced in policy formation is this: how can these shifts in resource uses be made without placing an intolerable burden on primary producers? The problem is acute in our society because we rely on income incentives as a means of shifting the use of resources. The adoption of policies aimed at reducing income inequality among segments may necessitate the adoption of stimulants, other than payments to factors of production, for moving human resources toward secondary and tertiary industries, if the efficiency of the economy is to be maintained. This may involve subsidies to increase the mobility of labor such as support for education and vocational training, public health programs, public housing, and information services, and an expansion in job opportunities in the industrial sectors.

Brownlee and Johnson have presented three conclusions with policy implications. " . . . special stabilization measures, such as support prices, cannot be justified on the ground that farm income is national income determining . . . special income transfers to agriculture are not warranted on the basis that farm people have different spending habits than non-farm people . . . special stabilization measures can be justified on other grounds." The last two

conclusions will not be questioned in this review and the models which are presented in support of the first conclusion are accepted as being internally consistent. Question is raised, however, about the limitations which should be placed upon the models when they are used as a basis for policy.

The models used in support of the first conclusion eliminate farm income as a relevant variable in national income determination. In order for national income to be independent of farm income at least the following condition must be established: Changes in expenditures on farm products by non-farmers are offset by equal changes in expenditures on non-farm products by non-farmers. This would be stated in real terms as well as in monetary terms in order to be useful in a welfare framework. The assumption of a similar condition for any other segment of the economy, coal miners, steel workers, railroad employees, etc., would lead to a similar conclusion in respect to the relationship of the income of that segment to national income. If this condition were established the level of national income would be fixed in the general static model independent of the income of a part of the economy. A model such as this can be used as a working hypothesis but policy recommendations cannot be based on it until its empirical validity is established.

In the static models presented by Brownlee and Johnson, resource and income allocations occur without frictions and there is neither monetary expansion or contraction. In a dynamic model the reverse may be postulated. A decline in income and expenditure in one segment of the economy, for example, may bring declines in income in other segments, especially if general monetary contraction is allowed. The dynamic models, more relevant to policy, could lead to conclusions the reverse of those reached with the static model. The dynamic model is involved with frictions which inhibit resource adjustments or with leads and lags in the relationships among variables. If a measurement of these frictions is made it may be possible to determine the magnitude of expenditures on special programs for agriculture or for any other segment of the economy which can be justified in terms of national income. The omission of monetary expansion and contraction and of frictions or leads and lags in the models results in failure to reveal the dynamics of the relationship among national income and the major segments of income. The actual existence of monetary expansion and contrac-

tion and of frictions in resource allocations indicates that the magnitude of the national income is related to the magnitude of the income of the various segments and, if a stable national income and/or a higher real national income is held as a goal of society, the fluctuations in the various segments cannot be ignored.

The reasons for stabilizing national income—and for expanding real income—rest on welfare considerations. Where stability requires income transfers we are faced with a dilemma. Either adopt the criterion used by Brownlee and Johnson which provides analytical precision, or attempt to determine the net welfare gains and losses which will be associated with programs which sacrifice some aspects of resource efficiency for supposed income goals. Programs of price supports and production payments—especially price supports—frequently pass beyond the stage where there may be a gain in income stability without adverse effects on resource use or net national product. Such programs cannot be appraised unless something is known about the marginal rates of substitution among objectives.

The case of the special pleaders can largely be rejected but it is important to recognize the elements of similarity in the case for stability programs for various segments of the economy. Compensatory payments to agriculture may be viewed as underemployment payments and can be defended on grounds similar but not identical to those used in defending unemployment payments in the non-farm sector. A pertinent question is this: How can the level and distribution of underemployment payments be set so as to (1) counteract short-run random price fluctuations, (2) provide temporary relief to the family, (3) have a positive effect on the long-run efficiency of resource use? The procedure for attempting to answer this question could be as follows: (1) Outline the adjustments which must be made in an agricultural area in moving toward the optimum in resource efficiency; (2) formulate the program which would maximize this movement; (3) determine how far this program should be modified to counteract price fluctuations and to provide relief.

## DISCUSSION

ALBERT G. HART
*Columbia University*

This audit of the economic-stabilization properties of various types of farm-support schemes strikes me as admirable. There is little I would want to subtract; but I do want to correct an underemphasis on the stabilizing effects of a stable physical-volume flow of farm products

In drawing up analytical models, such as Brownlee and Johnson use so tellingly in their footnotes, we tend either to set up a single term covering both farm and non-farm output of consumables, or at most (as they do) to make a split between the farm and the non-farm sector. But in the absence of government intervention, the inelasticity of farm supply means also an inelastic demand for food-distributing services: physical processing, transport of food, food merchandising. If food supply at the farm is cyclically stable, the insistence of food on pressing itself into use stabilizes employment and income in this sector. If farm price policy makes the flow of food vary with fluctuations in consumer income, this stabilizing factor is removed. To exhibit this effect, the best model is one which splits off food production and handling from other consumer-goods production.[1]

A simple model of this sort may be expressed by a 10-variable equation system, as follows:

(1) $I$ = private gross investment + government purchase of goods = exogenous.
(2) *Either*: $F$ = food output (measured at retail) = exogenous
*or* $P$ = retail food price level = exogenous
(3) $O$ = total physical output outside government
$= I+F+C$ (output of other consumption goods)
(4) $A$ = food-sector's income = $PF$
(5) $W$ = non-food-sector's income = $I+C$ if we take prices of everything but food to be constant
(6) $Y$ = gross income of private economy = $A+W$
(7) $R$ = tax revenue minus government salaries and interest minus transfer payments = (to give illustrative numerical values) $.2Y-28$
(8) $PF$ = expenditure on food
= (illustratively) $.25(Y-R)+20P-15$. This function has an income-elasticity of about unity and a price-elasticity of about $-\frac{1}{4}$, for the interesting range.
(9) $C$ = expenditure on non-food consumption
= (illustratively) $.6(Y-R-PF)+24$
(10) $S$ = savings = $Y-R-PF-C$

[1] The simplifying assumption of a steady thrust of goods into consumption does not work for fibers; so the fiber-producing side of farming should perhaps be thrown into the non-food sector.

This system may be solved on several variant assumptions, with the following results:

| Variable | Full-Employment Solution | Under-Employment Solutions | | |
|---|---|---|---|---|
| | | A | B | C |
| Exogenous | $I_0=60$, $F_0=60$ | $I_0=50$, $F_0=60$ | $I_0=50$, $P=1$ | $I_0=60$, $P=1.2$ |
| $I$ | 60 | 50.0 | 50.0 | 60.0 |
| $F$ | 60 | 60.0 | 55.5 | 53.9 |
| $C$ | 120 | 112.5 | 111.8 | 118.9 |
| $O$ | 240 | 222.5 | 217.3 | 232.8 |
| $P$ | 1 | 0.875 | 1.000 | 1.200 |
| $A=PF^2$ | 60 | 52.5 | 55.5 | 64.7 |
| $Y=A+I+C$ | 240 | 215.0 | 217.3 | 243.6 |
| $R$ | 20 | 15.0 | 15.5 | 20.7 |
| $S$ | 40 | 35.0 | 34.5 | 39.3 |
| The full-employment solution resembles the 1948 economy. | | | | |
| Translating into terms of employment, we get roughly: | | | | |
| Employment: | | | | |
| Food, nonfarm | 9.0 million | 9.0 | 8.3 | 8.1 |
| Nonfood | 35.5 | 32.0 | 31.9 | 35.3 |
| Unemployment | 2.1 | 5.6 | 6.4 | 3.2 |

In short, given a disturbance which is capable of increasing unemployment by $3\frac{1}{2}$ million under food-price flexibility, this model suggests that food-price rigidity will add about $\frac{3}{4}$ million to unemployment—chiefly but not entirely in the food sector.[3] An arbitrary 20 percent markup of food prices, in the model, can create about a million of avoidable unemployment in what would otherwise be a prosperity. Without taking the numerical results of this illustration too seriously, it is plain that the stability of physical farm output should not be sacrificed too light-heartedly to the cause of stable farm income.

[2] Of this, food-processing income may be taking $\$2F/3$, leaving farm income of $20 billion in the first column, $12.5, $18.5, and $28.7 billion in columns, A, B and C.

[3] Transfer payments to farmers to bring their incomes back to full-employment levels would fall far short of restoring full employment either in food-handling or in non-food. In column A, a transfer (exogenous change in variable $R$) of about $6\frac{1}{4}$ billion would restore farm income to $20 billion, and would raise C to about $114.7 billion.

# NEW ENGLAND DAIRY FARM MANAGEMENT PROJECT AS AN EXAMPLE OF THE OPERATING UNIT APPROACH TO FARM MANAGEMENT ANALYSIS

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AFTER years of discussing available tools and using them in applied studies, farm management workers are still seeking a methodological framework that can be generally accepted as a basis for further effort. Several recent articles have helped to establish certain fundamental principles and to show limitations of some existing methods.[1] The objectives of this paper will be (1) to illustrate the operating-unit approach as applied in a current project, and (2) to discuss its place among other methods. The essential feature of this approach is the preparation of detailed and comprehensive case studies of particular operating units. Financial budgetary analysis usually comprises part of each case study. The operating unit approach may be used not only when the primary objective is to deal with problems of the particular operating units studied, but also when the primary objective is to deal with problems in a larger economic universe, or when a combination of objectives is involved. The latter is the situation in this illustrative project.

## *The Project*

Since the close of the war, New England agriculture has been faced by the challenge of important technological developments, new personnel, and changing market relationships. This situation calls for continued adjustment on the part of all persons and agencies concerned with administration of resources in the area. Economic analysis can make a contribution. As a step in this direction, the New England Dairy Farm Management Project[2] was undertaken to provide a better understanding of adjustment opportunities on dairy farms.

[1] See especially E. O. Heady, "Elementary Models in Farm Production Economic Research," this *Journal*, Vol. 30, May 1948, pp. 201–25.

[2] Funds granted by the Charles H. Hood Dairy Foundation made possible this cooperative project of Harvard University and the six state agricultural colleges. With assistance from Soil Conservation Districts, county foresters, the Production and Marketing Administration, and other state and federal agencies, the project has become an example of widespread coordinated effort toward agricultural adjustment in the area.

Cooperators in the project include 241 dairymen representing the types of operating units and the range of physical resources likely to be involved in commercial dairying in the years to come. The various agricultural sub-areas of New England are represented by 14 study groups, each group consisting of nine to 32 cooperators located in a single county or in two adjacent counties. Within each study group, dairy farm characteristics such as herd size, combination of enterprises, soil associations, and market outlets are represented on a roughly proportional basis. An effort was made, however, to limit the choice of cooperators to individuals in a position both to make forward-looking plans and to attempt their adoption. In general, this meant working with younger-than-average operators, or with families including a younger man. County agents and other agricultural leaders suggested the names of operators of farms in the various size and resource classifications. After a preliminary selection, each prospective cooperator was interviewed to make sure that he was willing to participate.

Opportunities for achieving more successful organization and management on each cooperating farm were carefully analyzed through the joint efforts of the farmer, the county agent, and various specialists. The first step was to inventory the physical and human resources on the individual farms. Soil Conservation Districts supplied maps showing detailed information on soil characteristics. Woodland stands were classified with the help of county and extension foresters. The second step was to outline the normal organization of the present business—crops grown and yields obtained, numbers of livestock kept and their production, rates of fertilization and feeding, and a summary of receipts and expenses calculated on the basis of long-range prices. The third step was to list and appraise a number of alternative management programs suggested by the farmer, the county agent, or the farm planner. In most cases, a change in one phase of business organization will call for related changes in various other parts of the business; thus the advantage of making a change in land use may depend on corresponding adjustments in livestock numbers, feeding practices, equipment or buildings, and use of labor. The list of combinations of major and minor changes could be extended without limit for almost any farm, but the number of alternative programs warranting serious consideration is fairly limited. Income possibilities under each of these more promising alternatives were appraised by esti-

mating receipts, expenses, and net farm income. After considering these income possibilities in the light of personal preferences and risks, the cooperators were in a position to determine their proposed plans. These revised plans incorporate a variety of changes such as the following:

1. Providing hay and pasture more adequate in quantity and quality for present herds.
2. Increasing hay and pasture production to permit keeping more cattle.
3. Introducing new equipment to permit a larger output from the regular farm labor force.
4. Improving the quality of cows by raising a larger proportion of replacements, by improved breeding practice, and by selection.
5. Adjusting secondary enterprises to make better use of resources not well suited for dairy production.
6. Adjusting rates of grain feeding to more economical levels.
7. Saving labor through changes in barn layouts, field layouts, and work methods.

Folders including maps, summary tables, and outlines of planned changes were prepared for use by each farmer and his county agent.[3]

The sharpest focus in most of the proposed plans is on the period five to ten years hence. Most farmers would find it difficult to complete the succession of changes and achieve the full benefits of these plans in less than three to five years. On the other hand, external factors change rapidly, and the individual farmer seldom has much to gain by making a very detailed plan for a period more than ten years ahead. But the plans represent more than a comparison between two static situations—the "present" and the "proposed." In each case some consideration has been given to the step-by-step sequence through which the business would move from one situato the other, and in many cases consideration has been given to more distant adjustments than those specifically included in the proposed plan.

### *Trends Indicated by Proposed Plans*

Substantial opportunities for more efficient dairying are indicated by the comparison between present and proposed plans.

The trend to larger dairy herds is clear-cut. This has been proceeding for years, and the proposed plans call for a further average

[3] For three illustrative plans, see Ayers Brinser and R. G. Wheeler, "Farm Planning as a Basis for Extending Agricultural Credit," this *Journal*, Vol. 30, May 1948, pp. 243–58.

increase of seven cows per farm (Table I). Three-fourths of the farms will participate in this increase. Plans also call for increasing the proportion as well as the number of replacements raised on farms in both northern and southern New England.

TABLE I. PLANNED CHANGES IN THE DAIRY ENTERPRISE ON COOPERATING FARMS

| Item | Me., N.H., Vt. | | Mass., R.I., Conn. | | Six States | |
|---|---|---|---|---|---|---|
| | Present | Proposed | Present | Proposed | Present | Proposed |
| | | | *Number per farm* | | | |
| Cows of milking age | 23 | 30 | 26 | 33 | 24 | 31 |
| Heifers started each yr. | 5.7 | 8.1 | 5.4 | 8.1 | 5.6 | 8.1 |
| Cows bought each year | 1.3 | 0.2 | 2.6 | 1.1 | 1.8 | 0.6 |
| | | | *Pounds per cow* | | | |
| Av. milk production | 6,330 | 7,150 | 7,210 | 7,730 | 6,700 | 7,380 |
| Av. grain feeding | 2,080 | 2,070 | 2,470 | 2,260 | 2,245 | 2,150 |
| Av. T.D.N. feeding | 5,070 | 5,600 | 5,630 | 5,890 | 5,300 | 5,710 |

Increases in herd size will mean corresponding changes in total volume of business on most of the cooperating farms; substitution between enterprises will be of minor importance. The proposed increases in output per farm are to be achieved primarily through adding equipment and increasing output per worker, rather than through any substantial increase in the months of labor used per farm (Table II). By using milking machines and fast-milking techniques, dairymen have been able to take care of more cows without increasing chore time. New implements and tractor power are permitting a similar speed-up in jobs connected with forage production.

Increasing the number of steady workers would add little, if anything, to net income on most farms, under the assumed price rela-

TABLE II. PLANNED CHANGES IN THE LABOR FORCE ON COOPERATING FARMS

| Item | Me., N.H., Vt. | | Mass., R.I., Conn. | | Six States | |
|---|---|---|---|---|---|---|
| | Present | Proposed | Present | Proposed | Present | Proposed |
| | | | *Months per farm* | | | |
| Operator & family | 16.8 | 17.1 | 17.8 | 16.8 | 17.2 | 17.1 |
| Hired | 5.9 | 6.9 | 11.6 | 15.0 | 8.1 | 10.0 |
| Total | 22.7 | 24.0 | 29.4 | 31.8 | 25.3 | 27.1 |
| Work off farm | 1.9 | 1.4 | 1.3 | 1.2 | 1.6 | 1.3 |
| Work on farm | 20.8 | 22.6 | 28.1 | 30.6 | 23.6 | 25.7 |

tionships. Few important economies of large-scale organization appear, although striking diseconomies are similarly absent. Small farms can adopt many of the techniques in use on large farms, whereas large farms have no special advantage in supplying the large amount of individual attention which seems to be required for successful results with dairy cows. High-capacity operators will be able to achieve relatively favorable incomes with businesses employing only one or two other year-round workers. If such units are operated as specialized dairies, they will have about 40 to 60 cows; diversified units with the same number of steady workers will have slightly smaller herds. Larger specialized or diversified businesses will be more profitable in a few exceptional cases. On the other hand, the most advantageous unit on many small farms will include no more than 15 or 20 cows, unless the operator objects to the difficulties of conducting a one-man dairy business. Increases in herd size would be of doubtful benefit on either large or small farms, under the assumed price relationships, if there were also need for hiring additional steady workers and incurring average costs for the additional forage and housing.

Among 76 northern New England farms which involved relatively specialized dairying under both present and proposed plans, 13 planned one-man businesses with herds of 18 to 22 cows and 17 planned two-man businesses with herds of 35 to 45 cows. These two modal types will have an important place in the future of New England dairying. Other modal types are to be found among the more diversified farms. But a number of the planned units will not correspond to any modal type. Businesses varying widely in size and combination of enterprises have a good chance of proving successful if they are adapted to the resources, aptitudes, and desires of particular farm families.

New England has at least 20,000,000 acres of land potentially available for forage production. Less than a fourth of this land is cropped at present, and intensive use for forage production prevails on only a few thousand acres. Much of the hayland on dairy and non-dairy farms alike is reseeded infrequently and receives little fertilization. These farms also include large acreages of rough pasture or woodland on soils moderately well adapted for forage production, and there is similar land not now in farm units. Thus New England dairymen have a number of alternative sources of additional forage. These include more frequent reseeding and increased

TABLE III. PLANNED CHANGES IN LAND USE AND FORAGE PRODUCTION ON COOPERATING FARMS

| Item | Me., N.H., Vt. | | Mass., R.I., Conn. | | Six States | |
|---|---|---|---|---|---|---|
| | Present | Proposed | Present | Proposed | Present | Proposed |
| *Land use* | | | *Acres per farm* | | | |
| Forage Crops | | | | | | |
| Corn for silage or fodder | 3.3 | 2.8 | 10.2 | 9.3 | 6.0 | 5.4 |
| Hay & pasture crops | 53.2 | 56.1 | 39.1 | 42.6 | 47.6 | 50.8 |
| Grains | 2.7 | 2.5 | 0.3 | 0.3 | 1.8 | 1.7 |
| Cash crops | 3.2 | 2.4 | 3.4 | 3.2 | 3.3 | 2.7 |
| Idle cropland | 0.8 | — | — | — | 0.5 | — |
| Total cropland | 63.2 | 63.8 | 53.0 | 55.4 | 59.2 | 60.6 |
| Seeded pasture mixtures | 1.1 | 7.1 | 3.3 | 19.2 | 1.9 | 11.8 |
| Other fertilized pasture | 2.7 | 11.2 | 5.3 | 8.9 | 3.7 | 10.3 |
| Total improved land | 67 | 82 | 62 | 83 | 65 | 83 |
| Woodland pasture | 64 | 5 | 35 | — | 52 | 3 |
| Other pasture | 60 | 42 | 57 | 28 | 59 | 37 |
| Woods not pastured | 62 | 123 | 20 | 55 | 46 | 96 |
| Other land | 4 | 4 | 6 | 7 | 5 | 5 |
| Total land operated | 257 | 256 | 180 | 173 | 227 | 224 |
| Land improvement | | | | | | |
| Cleared for seeding | | 3.4 | | 8.2 | | 5.3 |
| Smoothed for pasture | | 2.7 | | 2.2 | | 2.5 |
| Rented cropland (incl. above) | 4.8 | 3.6 | 11.6 | 10.7 | 7.4 | 6.3 |
| Rented pasture (incl. above) | 6.1 | 2.8 | 18.6 | 11.5 | 10.9 | 6.2 |
| New legume seedings (incl. above) | 6.3 | 10.0 | 6.3 | 10.9 | 6.3 | 10.3 |
| *Fertilization of Improved Land* | | | *Pounds per acre* | | | |
| Nitrogen (N) | 36 | 46 | 55 | 58 | 43 | 51 |
| Phosphoric Acid ($P_2O_5$) | 46 | 75 | 61 | 90 | 52 | 81 |
| Potash ($K_2O$) | 45 | 85 | 65 | 117 | 52 | 97 |
| Ground limestone | 315 | 346 | 436 | 432 | 360 | 380 |
| *Forage Yields on Cropland and Seeded Pasture* | 1.6 | 2.2 | *Tons of hay equivalent per acre* 1.9 | 2.4 | 1.7 | 2.3 |
| *Forage production* | | | *Tons of hay equivalent* | | | |
| Silage | 12 | 24 | 27 | 34 | 18 | 28 |
| Hay | 68 | 86 | 54 | 77 | 62 | 83 |
| Pasture | 54 | 78 | 57 | 85 | 55 | 81 |
| Total | 134 | 188 | 138 | 196 | 135 | 192 |

fertilization of open land now on their farms or nearby farms, as well as adding to the acreage of improved land by clearing operations.

Under the proposed plans, forage for additional livestock will be produced mainly by stepping up rates of fertilization and reseeding on open land within the existing farm units (Table III). The

acreage of improved land will increase from 65 to 83, including 9.9 acres of additional seeded pasture mixtures and 6.6 acres of other fertilized pasture. Clearing of trees, brush, and stone, or a less costly smoothing operation, is planned on about half the land to be transferred to seeded or fertilized pasture. Scattered boulders will be removed from cropland in a number of cases. The need for clearing and boulder removal is considerably greater in southern New England than in northern New England. No increase in the total acreage operated is planned, and less standing hay will be obtained outside the farm boundaries. Thus a relatively small share of the total land potentially available for forage will be used at a relatively intensive level. Difficulties in arranging long-term leases retard more economic use of some of the remaining land, but much of it could be used effectively for dairying only if incorporated in additional operating units. Relatively intensive use of a limited acreage has the advantage of paving the way to production of better quality forage. More frequent reseeding and heavier fertilization serve as stepping stones in this direction, especially if they are accompanied by use of more effective equipment, grass silage, and other improved techniques. Measures to improve forage quality probably offer the greatest opportunity of any adjustments open to New England dairymen. Expansion of herds will be unprofitable in a number of cases unless improvement in forage quality can be achieved. Improved forage quality will be reflected in reduced grain feeding or increased milk production. According to the plans, average grain feeding will be slightly below the present level, and total milk production on cooperating farms will increase 43 percent.

What do these plans mean in terms of total New England milk supply? Do they warn of more Class II milk and lower blended prices? Such a forecast does not necessarily follow from the findings of the study. Cooperators are relatively young, and they are interested in making progress. As they increase production, changes in the opposite direction will no doubt be taking place on some other farms. The net result will depend on the relative strengths of the opposing trends. In the past, the trend to larger herds has been accompanied by a gradual reduction in the number of herds. This reduction is likely to continue if the demand for milk remains about constant, and if opportunities for non-farm employment are available. Thus the changes planned by cooperators do not give the complete picture of probable changes in milk supply. But they

TABLE IV. PLANNED CHANGES IN FINANCIAL SUMMARY ON COOPERATING FARMS

| Item | Me., N.H., Vt. | | Mass., R.I., Conn. | | Six States | |
|---|---|---|---|---|---|---|
| | Present | Proposed | Present | Proposed | Present | Proposed |
| | *Dollars per farm** | | | | | |
| *Receipts* | | | | | | |
| Milk | $4,750 | $ 7,200 | $ 9,230 | $11,770 | $6,490 | $ 8,980 |
| Cattle and Calves | 600 | 670 | 680 | 830 | 630 | 730 |
| Poultry & Eggs | 690 | 1,060 | 1,410 | 1,520 | 970 | 1,240 |
| Cash crops | 560 | 490 | 1,100 | 1,110 | 770 | 730 |
| Other | 630 | 620 | 600 | 580 | 620 | 600 |
| Total | 7,230 | 10,040 | 13,020 | 15,810 | 9,480 | 12,280 |
| *Expenses* | | | | | | |
| Grain | $2,100 | $ 2,860 | $ 3,060 | $ 3,560 | $2,470 | $ 3,130 |
| Labor | 640 | 860 | 1,500 | 1,790 | 970 | 1,220 |
| Lime & fertilizer | 320 | 740 | 470 | 930 | 380 | 810 |
| Other | 2,250 | 2,590 | 4,410 | 4,300 | 3,090 | 3,260 |
| Total | 5,310 | 7,050 | 9,440 | 10,580 | 6,910 | 8,420 |
| *Net farm income* | $1,920 | $ 2,990 | $ 3,580 | $ 5,230 | $2,570 | $ 3,860 |

* At long-range prices.

do show the gains that can be made on typical farms where operators are willing to plan aggressive management and make moderate additional investments (Tables IV and V). They point to adjustments which will enable New England dairymen to continue successful competition in milk production.

If many dairymen do take advantage of the opportunities shown by the plans, and if rising total milk production results in a falling blended price, a reduction in the rate of grain feeding can be expected. In the end, net returns per quart of milk may be lower, but increased volume will help to maintain a high level of net income per farm. Producers as well as consumers will benefit from this sort of shift in the balance between production and consumption.

TABLE V. PLANNED INCREASE IN INVESTMENT ON COOPERATING FARMS

| Item | Me., N.H., Vt. | Mass., R.I., Conn. | Six States |
|---|---|---|---|
| *Additional Investment* | | | |
| Land improvements | $ 280 | $ 790 | $ 480 |
| Buildings | 1,490 | 1,530 | 1,510 |
| Equipment | 1,140 | 700 | 970 |
| Livestock | 1,330 | 1,430 | 1,360 |
| Total | $4,240 | $4,450 | $4,320 |

*Using the Results*

Gains from the project can be realized in the formulation of both private and public policy. The most direct applications, of course, will be on the farms of the cooperators. The plans constitute a good start toward more successful management. With the plans as guides, county agents, conservationists, foresters, and other specialists will be able to aim their educational efforts and action programs more directly at needed adjustments on cooperating farms and also on other similar farms. Thus, the project provides a vehicle for integrating the efforts of all agencies dealing with agricultural adjustment.

Many of the cooperating farms represent resource and enterprise combinations repeatedly found in the area. These farms are modal with reference to a limited number of major variables such as size and combination of enterprises, soil characteristics, and labor force. An analysis of the combination of problems found on one of these modal farms will help operators of similar businesses to deal with the particular problems of their own situations. Such an analysis will demonstrate methods of planning the farm business and of formulating particular alternatives for comparison; often it will also provide an illustration of a well-integrated plan for a typical combination of resources and objectives.

In Southern New England, for example, there are a thousand or more specialized dairy farms with about 12 to 16 milk cows and one regular worker (the operator). There are several such farms in the project, including one where the operator plans to increase from 14 to 20 cows. This shift from 14 to 20 cows, with the associated changes in land use, equipment, buildings, and management methods, is pertinent to the adjustments which are likely to be taking place on a number of similar farms. Twenty-cow units fundamentally similar to the one planned will probably represent the adjustment goals on many one-man specialized dairy farms in southern New England; the proposed plan represents a well-integrated organization of this sort. Furthermore, the comparison between buying and raising herd replacements on this farm is formulated in terms of alternative combinations of receipts and expenses which will be applicable with only slight modification to a number of other farms. The same would be true for other specific problems. In view of these circumstances, a ten-page statement setting forth

the operator's plan (without revealing his identity) has been prepared. County agents will be able to hand this statement to other farmers with similar problems. In the same way, operators of farms corresponding to other modal types can benefit by the plans developed for units representing their groups.[4]

Close collaboration among research, extension and action agencies contributed to the soundness of the individual plans, and also has provided a setting in which results are more likely to be fully used. County agents, soil conservationists, and foresters will give special attention to the problems encountered by cooperators in adopting the proposed plans. In addition, they will be prepared to make wide application of the methods and analyses on other farms.

Analysis of adjustment possibilities on an area-wide basis can begin with the plans for modal farms. But a cross section representing an area will usually include a number of farms which do not closely correspond to any modal type. Both modal and non-modal units are included in the group of 241 farms. The composite picture provides considerable useful information. It should be evident, however, that summarizing the proposed plans is not identical with the task of analyzing adjustment possibilities for the area.[5] In the first place, the summary of planned changes does not allow for a change in the number of operating units. Such a change might arise through the establishment of new units or through termination of present ones. In the second place, an attempt was made to select cooperators who looked forward to continuing operations and to whom planning would be useful. Adjustment opportunities found on the farms of cooperators are probably representative of opportunities in the area, but capitalizing on these opportunities will require management as aggressive as that found on cooperating farms. In the third place, a sort of partial equilibrium analysis is involved. The "long-range" prices served as a basis for comparing alternative plans and determining desirable adjustments, but in the aggregate, the planned adjustments might have proved incompatible with free market prices at the "long-range" levels. In fact, however, the results of the analysis indicate little reason for revising the price

[4] This does not imply that a stock of ready-made farm plans can eliminate the need for individual analysis and planning. Every farm presents certain unique problems and requires a plan unique in some respects.

[5] The interdependence between micro-economics and macro-economics is clearly brought out by Sidney Hoos in "Implications of Aggregative Theories for Agricultural Economists," this *Journal*, Vol. 31, Nov. 1949, pp. 851–62.

assumptions, providing some sort of control of potato production is assumed, and providing farmers are conservative in expanding poultry facilities.

### *The Methodology*

More general agreement on the scope and limitations of the field of farm management will be necessary before the operating-unit approach is likely to be used as fully as it might be. To some, the job is to develop "principles" of farm management, and then educate farmers in the use of these "principles." On this basis, large amounts of effort have been devoted to farm surveys and accounting. Often the results have been used wisely and effectively in extension work. On the other hand, Heady has restated the argument that these "principles" can lead to erroneous conclusions, and he has argued for a more direct approach to the problems to be solved.[6] Management economics, he explains, would involve only simple applications of the principle of profit maximization, if adequate data on physical production functions and prospective prices were available.

Since the time of the early input-output studies, there have been workers who would accept this formulation of the problem. But some of them would disagree with Heady's conclusion that with adequate data, "there would need be no field of farm management research."[7] This statement emphasizes the difficulty which has been met in defining the scope and limitations of the farm management worker's field. Some would leave production functions to the technologist, price expectations to the price specialist, and synthesis of these data to the farmer, thus narrowing the field of farm management to the vanishing point. Others would contend that the farm management worker's primary job is to develop basic information on expectations regarding production functions and prices; again the farmer would be expected to make his own budgetary analysis on the basis of these data. Still others would forego budgetary analysis entirely and attempt only to provide the farmer with "principles" drawn from the experience of other operators. The actual process of making budgetary analyses appears to have been too plebeian for the economist, yet too "theoretical" for the "practical" man.

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[6] *Loc. cit.*, pp. 206–22.
[7] *Loc. cit.*, p. 211.

Careful budgetary analyses dealing with problem situations are by no means beyond the capabilities of the ordinary farmer. In fact, there are many farmers who continually appraise alternatives in terms of additional costs and returns (monetary and non-monetary; objective and subjective). Sometimes their analyses are crude, sometimes highly refined. On the whole, the decisions reached are likely to be more sound than those based only on custom or intuition. If so, the farm management worker can perform a real service (1) by helping the farmer to learn better techniques for formulating and analyzing problems, (2) by promoting the consolidation and dissemination of information on technological and price expectations, and (3) by analyzing problems as they exist for particular operating units. Farm management analysis based on the operating unit approach as used in the dairy project will serve these three purposes. In a dynamic environment, there will be continuing need for such a program.

In Extension work, the operating-unit approach is the basis for the Farm and Home Planning programs which have been undertaken by a number of states. When appropriate sampling measures are followed, the method is equally useful as a research tool. In the dairy project, the method has contributed to both sorts of objectives. These facts suggest that there is little reason for trying to divide farm management work into airtight compartments labeled "Extension" or "Research."[8] Administrative policy in perpetuating this misleading dichotomy may actually hinder using the operating-unit approach for "Analysis" which combines "Research" and "Extension" work.

Analysis of alternatives within the individual farm unit is an appropriate starting point even when interest focuses on some larger economic universe. The procedure is to move through successive stages of partial-equilibrium analysis toward a more general view. Currently, the opposite approach is also in high favor. Farm management workers at Iowa State College emphasize the deriving and using of condensed farm production functions formulated mainly in terms of values of groups of inputs and outputs. Heady provides an illustration of this sort of function relating total product value to value of real estate, months of farm labor, value of machinery plus machinery operating expenses, value of livestock plus livestock

[8] Separate objectives and personnel qualifications are to be recognized, however.

input items, and other cash operating expenses on a random sample of Iowa farms.[9] Such a function is of limited usefulness if there is intercorrelation among the variables; moreover, there is often a presumption that some of the factors chosen as independent variables are correlated with the quantity and quality of management —a variable which was not introduced explicitly in the production function for the sample farms. Even when interest centers on public policy in resource use, changes will usually be achieved by intra-farm adjustments. Intra-farm problems can be analyzed with only limited success by inter-farm comparisons, whether the latter are formulated as production functions or as profit factors. The operating-unit approach is handicapped by the lack of data on price and input-output expectations, but it provides a framework for making full use of available data.

Several different techniques are available to the worker choosing the operating-unit approach. The choice depends partly on the time span of the analysis. If attention focuses on the immediate future, many elements in the situation must be regarded as fixed, whereas some of these elements would become variable if a longer-range outlook were adopted.

Fellow's concept of synthesizing a scale curve based on production functions or standard performance rates[10] is primarily related to the long-run situation, where the specialization of capital and human resources is reduced to a minimum. Planning the agricultural development of a newly irrigated area might well use such a technique, but analyses in established agricultural areas will have limited significance unless they take account of the relative fixity of commitments represented by the existing patterns of ownerships, buildings, and personal skills. Even where fixed commitments are important, however, the long-run analysis may provide an interesting and suggestive contrast with results based on a shorter-run view.

Another technique is to analyze problems in terms of a single, average farm or a small group of modal farm units. In some cases, an actual farm business corresponding closely to a mean or mode is selected and used without adjustment; in other cases, such a busi-

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[9] E. O. Heady, "Production Functions from a Random Sample of Farms," this *Journal*, Vol. 28, November 1946, pp. 989–1004.

[10] I. F. Fellows, "Developing and Applying Production Functions in Farm Management," this *Journal*, Vol. 31, November 1949, pp. 1058–64.

ness is "adjusted" in a few particulars so that it will correspond more closely to the average unit; sometimes the analysis is entirely in terms of a hypothetical unit. The time span may be long or short.

The third technique is to analyze problems on a sizeable group of farms, giving full consideration to the known factors which will limit the effective range of choice for each operator during the immediately ensuing years. This is the one chosen in the dairy project. Full acceptance of this technique implies that each farm family will participate actively in the analysis. In this way it is possible to introduce preference schedules taking account of demand for income, favored occupation, attitude toward uncertainty, and other subjective considerations. This technique is primarily adapted to relatively short-run analysis, dealing mainly with periods in which the operator cannot escape from numerous past commitments. In fact, however, this is the sort of analysis which is most pertinent in a dynamic environment.

Progress in farming involves continuous planning of adjustments and making of new long-range investments, nearly every new decision being influenced by earlier long-range commitments. Meanwhile external conditions are constantly changing. Thus the actual sequence of adjustments may bear little relation to the tendencies suggested by long-run equilibrium analysis at any single moment. Specialized capital and human resources may be fully as important as "natural" land capabilities in determining the appropriate organization for particular farming units over relatively long periods of time.

For example, dairy, poultry, or vegetable production currently seem to be relatively close alternatives for a good deal of land in Middlesex County, Massachusetts. But the man buying a farm with a good set of dairy buildings has strong incentives to continue using the land for dairying. After he has built up a productive dairy herd, worked out an effective land use program, and developed dairying skills, the advantage of shifting to other lines of production will be small, even if price relationships have turned somewhat against dairying in the meantime. On the other hand, a vegetable enterprise may become firmly entrenched on a few acres of tillable land sandwiched between two dairy farms. Opportunity for incorporating this land in a unit of appropriate size for dairying may not appear for years, and meanwhile one or two boys growing up on the farm

may have developed special skills in producing and marketing vegetables. Economic analysis will be more meaningful if it takes account of the limitations imposed by such commitments.

### *Conclusions*

The farm management worker cannot hope to provide ready-made solutions for even the most important problems on each individual farm. But extensive analysis in terms of representative operating units will demonstrate appropriate ways of attacking particular problems; moreover, the solutions can be adjusted slightly to fit many situations similar to the ones actually analyzed. There is no need to stop at this point. Extending the number of case studies to include an appropriate sample of a particular group of operating units illustrates a technique for moving from micro-economics toward macro-economics, or from partial equilibrium analysis toward general equilibrium analysis. Such studies will be useful in formulating public as well as private policy.

# MARKETING AGREEMENTS AND COOPERATIVE MARKETING: SOME COMPARATIVE ASPECTS

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MOST farmers are small atomistic producers with little or no influence on market prices. In order to escape some of the handicaps characteristic of a competitive industry in a world of large scale industrial enterprises and monopoly controls, farmers began to join together in certain of their marketing and sales functions. Various techniques for integrating horizontally and vertically certain of these functions were employed, cooperative marketing and marketing agreements being two examples. In a sense, such integration techniques encompassed transformation of an atomistic industry into one which benefits from large scale marketing techniques and limited monopoly powers. Farmers have been engaged in cooperative marketing for more than a century. In the last decade and a half a great deal of emphasis has been placed on marketing agreements, which permit group action in some of the activities formerly performed by independent farmers or marketing cooperatives. To many farmers this approach had a certain appeal, because marketing agreements, if effective, embrace the entire industry and approach "compulsory industry cooperation."[1] This paper will inquire into some of the economic aspects of marketing agreements and cooperative marketing in order to clarify some of their effects on farmers and consumers.

## *Marketing Agreements and the Producer*

A marketing agreement may be considered to be an aggregate of individual economic units—private or cooperative in structure—which coordinate their sales policies, each one separately performing its production and marketing functions. In a formal sense a marketing agreement is a quasi-horizontally integrated entity

* I am indebted to Professors Henry E. Erdman and George M. Kuznets and to Dr. Jerry Foytik for critical reading of the manuscript.

[1] For a detailed discussion see Erdman, Henry E., "Supply and Adjustments in Fruit and Vegetable Marketing Agreements," *National Marketing Review*, Spring 1936, pp. 330–38. Nourse, Edwin G., "*Marketing Agreements under the A.A.A.*," Washington, D. C., The Brookings Institution, 1935, 446 p. Also Mehren, George L., "Some Economic Aspects of Agricultural Control," this *Journal*, Vol. 30, No. 1, February 1948, pp. 29–42.

which is managed by a control board aiming to enhance the profits of its members by devising and effectuating joint sales policies. Legal compulsion makes signed agreements enforceable and thus effective. With respect to the enunciation of certain specific sales policies, compulsory marketing agreements convert a "crowd of individualistic profit seekers" into a "magnificent unified joint profit-maximizing entity." In order to enhance profits the control board can differentiate its commodities, raise levels of demand and manipulate the amounts shipped. These processes are primarily carried out by regulating sizes and grades, as well as flow of goods over time and space, with the regulations stipulated by the control board. In certain cases advertising supplements the other techniques. Demand manipulation directed at profit enhancement is a very complex affair, because grade and size as well as time and space aspects are interrelated and are seldom precisely ascertainable empirically. It should not be overlooked that whatever actions control boards take, shipments will be manipulated in one way or another. Boards may change, for instance, the quantity of any one grade or the quantity of any one size offered in any one period or for the entire season. In order to know, for instance, the effect of any specific size or grade regulation on the group's profit standing, information on the elasticity of demand facing the group with respect to price of the precisely defined commodity on a given market in any one period of time would have to be known. It is the magnitude of this coefficient which would indicate the effect of such a regulation on the group's profits.

Usually market control regulation will involve little additional cost to the farmers, because the commodity has already been produced. Under such conditions, before the control board aiming to enhance the profits of the group could adopt a policy which would imply curtailments in shipments of a precisely defined commodity, i.e., size and grade, on a given market in any one period of time, it would have to be sure that in that specific case it is faced with an inelastic demand. As if this were not a difficult enough task, the board also has to forecast the effect of such an action on demands in future periods of time on the same and other markets for the same and other sizes and grades. Because of the fact that control boards hardly ever have this specific information, there is no assurance that their marketing policy benefits the group of farmers which participate in the marketing agreement.

Relatively few industries which have encouraged the use of marketing agreements for many years have even crude estimates of demand elasticities. The reasons for this are numerous. Among the most important are the complexity of the statistical problem of estimating and forecasting demand elasticities, lack of acceptable data on which an analysis can be based, and lack of competent staffs.

In order to get a general idea whether present marketing agreements assist farmers in maximizing their profits, some preliminary

TABLE I. AVERAGE WEEKLY ON TREE ELASTICITY OF DEMAND WITH RESPECT TO PRICE FOR FRESH CALIFORNIA PLUMS (1928–48 EXCLUDING 1943–45)

| Week of Season | On tree demand elasticity with respect to price (at centroid) |
|---|---|
| 2 | −9.05 |
| 3 | −2.81 |
| 4 | −1.26 |
| 5 | − .78 |
| 6 | − .72 |
| 7 | − .82 |
| 8 | − .81 |
| 9 | − .85 |
| 10 | − .65 |
| 11 | − .73 |
| 12 | − .69 |
| 13 | − .71 |
| 14 | −1.26 |
| 15 | −2.15 |
| 16 | −4.84 |

Sources of data:
1) Foytik, Jerry, *The California Plum Industry: An Economic Study*, Ph.D. Thesis, 1949 (University of California, on deposit in its library), 401 p.
2) U.S. Bureau of Agricultural Economics, *Fruit and Nut Prices*, Washington, D.C., 1947, 55 p.
(Source 1 furnished auction prices, shipments and regression coefficients, while Source 2 furnished on tree prices.)

estimates of demand coefficients (using presently available statistical techniques) were made. We are well aware of the numerous limitations of these techniques and offer the results solely as crude estimates; but in spite of the fact that we consider them too crude a guide for a control board, they may be useful for our restricted purposes. Thus for instance, the marketing agreement covering fresh California plums during the last few years involved a grade and size regulation which by and large was constant during any one

marketing season.[2] At the same time our weekly calculations for 1928–48, excluding 1943–45, indicate that demand facing the growers in the first and last three weeks of the marketing season was elastic at the centroid; while in the middle nine weeks demand was inelastic. (Table I)

A weekly analysis of Louisiana strawberry data (1924–40) shows a similar pattern of elasticities over the marketing season, although at a generally higher level (Table II).

TABLE II. AVERAGE WEEKLY IN-FIELD ELASTICITY OF DEMAND WITH RESPECT TO PRICE FOR FRESH LOUISIANA STRAWBERRIES (1924–40)

| Week of Season | In field demand elasticity with respect to price (at centroid) |
|---|---|
| 1 | −3.25 |
| 2 | −2.64 |
| 3 | −2.68 |
| 4 | −2.30 |
| 5 | −2.00 |
| 6 | −1.24 |
| 7 | −2.30 |

Source of data: Unpublished data collected and courteously made available by Professor Henry E. Erdman.

It seems doubtful that size and grade regulations which remain unchanged during the entire season, while the demand changes from highly elastic to inelastic and back to elastic, are in the best interest of the group. At the same time it must be said again that our calculations based on today's statistical techniques are not conclusive. Using the same technique we find that not all commodities under marketing agreements are inelastic in demand. Indications are that over the marketing season, for instance, on-tree demands are elastic for California-Arizona Desert Valley grapefruit, fresh California Bartlett pears and California plums. (Table III)

Control boards which regulate the temporal and spatial flow of commodities often claim that they improve returns to farmers by avoiding gluts on particular markets. To the extent that mitigating

[2] Dr. Jerry Foytik, who is well acquainted with the problems of the California plum industry, told the author, that the regulations promulgated during the past fifteen years: a) aim to increase net returns merely by curtailing the shipment to out-of-state markets of the lowest grades and the smallest sizes; b) indicate a tendency for the control agency to favor restrictions which (over the season as a whole) affect the different varieties with approximately equal severity; and c) kept during the entire marketing season a relatively fixed percentage of all plums (about five percent) off the market.

such gluts is beneficial to growers the present day efficient market news service and the transportation system with privileges of diversion in transit enable independent farmers, and in particular cooperatives, to avoid such gluts to no small degree. Another common claim by advocates of marketing agreements is that this technique offers the only means by which price spoiling grades can be kept off the market. There are two answers to this claim. First, there is the

TABLE III

| Commodity | On-tree season average demand elasticity with respect to price |
|---|---|
| 1) California-Arizona Desert Valley grapefruit | |
| (1930–41, 1946, 1947) | −2.01 |
| (1947–48) | −2.81 |
| 2) Fresh California Bartlett pears | |
| (1925–40) | −1.25 |
| (1935) | −1.64 |
| 3) Fresh California plums | |
| (1928–48, excluding 1943–45) | −1.20 |

Sources:
Commodity 1) Kuznets, George M., unpublished study on California-Arizona Desert Valley grapefruit.
Commodity 2) Hoos, S., and Shear, S. W., "Relation Between Auction Prices and Supplies of California Fresh Bartlett Pears," *Hilgardia*, Vol. 14, No. 5, January, 1942. Pp. 233–319., and U. S. Bureau of Agricultural Economics, op. cit.
Commodity 3) Foytik, Jerry, op. cit., and U. S. Bureau of Agricultural Economics, op. cit.

problem whether low prices mean low profits. Second, and this point is more important, general adoption of grade labeling together with consumers' education may very well offer a more profitable market for the crop which is priced and sold according to grade. The chances are that consumers would benefit from a well conceived system of grade labeling. Thus the question arises whether, instead of laboring with marketing agreements it would not be easier, more desirable and more promising to make further improvements in the market news service, in techniques of transportation and communication as well as introducing grade labeling and consumers' education so as to complement cooperative marketing efforts.

### *Cooperative Marketing and the Producer*

We may now turn to a brief inquiry into some of the economic aspects of cooperative marketing. A marketing cooperative may be defined as an aggregate of individual economic entities which pool

for joint marketing the products which they produce independently. Although the cooperative itself does not make any profit, its objective apparently is to maximize the profits of its members. While marketing agreements only substitute a single sales-policy-making body of restricted scope for numerous individual sales-policy-makers, most marketing cooperatives assume all the various marketing functions which in their absence would be performed by each member separately. Marketing cooperatives can and do affect the demand facing them in a fashion similar to that of marketing agreements. Each cooperative, however, can only influence the demand for its crop. Thus, in most cases, the more limited control by any one cooperative reduces its effectiveness as a price manipulator. More important, marketing cooperatives, besides affecting the price for their commodities, can and do have a specific effect on marketing costs.

Marketing cooperatives are horizontally integrated organizations in as far as a single management controls a number of operational units on the same level of the production or marketing process, aiming at joint profit maximization. At the same time many marketing cooperatives perform marketing functions on more than one level of the production-marketing system, i.e. contain elements of vertical integration. These two types of integration are often supplemented by complementarity, because many cooperatives market complementary commodities. Thus, while marketing agreements help to integrate horizontally a single function, i.e. the shaping of sales policies, many marketing cooperatives exhibit an integration which is horizontal, vertical and complementary in nature and encompasses numerous functions. Each and all of these integration types are apt to affect the cooperative's marketing costs. Theoretically, cooperative marketing can be associated with economies of integration, i.e. lowering of marketing costs, as well as diseconomies of integration, i.e. raising of marketing costs. It is by means of cooperation that atomistic farmers attempt to benefit from large-scale operation and its cost-reducing influence. The techniques by which farmers can reduce marketing costs in a framework of cooperative marketing are numerous and relatively well known. Economists and businessmen know much more about cost reducing marketing techniques and their profitable application than about their counterparts in the field of price manipulation. There are many reasons why coopera-

tives are often able to reduce marketing costs. Thus for instance, a marketing cooperative with its relatively large volume, may be able to operate a more efficient packing house than can the independent farmer. Again, a number of packing houses may be managed by experts who may also purchase packing material at lower prices. Because of the large volume many cooperatives can further reduce marketing costs by vertically integrating certain functions, by being able to eliminate transactions and separate sales efforts between bargaining units on different levels, by better interlevel adjustment and by possible absorption of middlemen's profits.[3]

Naturally, if multiple-unit and multiple-level operations are driven to extreme dimensions, diseconomies may come about. There are, however, numerous indications that many marketing cooperatives benefit from reduced costs. In addition to empirical evidence, the continuous existence of many small cooperatives bears out this fact. Many local elevators and other small local cooperatives dealing in staples have had little if any effect on prices in spite of cooperative efforts. Still membership is strong in those organizations because of benefits which apparently accrue to members, and thus must result primarily, if not exclusively, from lower marketing costs.

Further benefits may accrue to marketing cooperatives on the cost side. While the horizontal, vertical, and complementary integration elements which are usually associated with cooperative marketing tend to lower the general level of marketing cost functions, horizontal integration of physical marketing functions tends to flatten them.[4] It is for this reason that multiple unit marketing cooperatives, while aiming at maximizing profits to their members, will often approximate cost minimization. With horizontal integration tending to flatten marketing cost functions, operations at less than full capacity or in excess of full capacity will mean only slightly higher unit costs than operation at full capacity.

### *Consumer's Welfare*

There is still the problem of marketing agreements and cooperative marketing from the consumer's view. Although it is very

[3] For a more detailed treatment see Hirsch, Werner Z., *Economics of Integrated Marketing in Agriculture*, Ph.D. Thesis, 1949 (University of California, on deposit in its library). pp. 74–87, 127–33.

[4] For a detailed discussion of this phenomenon see Hirsch, op. cit., pp. 66–74.

difficult to establish precise welfare criteria, some general statements relative to these two marketing devices can be made. There is little reason to suspect that control boards which effectuate marketing agreements benefit consumers to any large extent, if at all. Should control boards succeed in manipulating prices in a way consistent with the group's profit motive, there is little reason to expect that such a condition would be consistent with the consumer's desire for low prices and plentiful supply of farm products. If the board does not successfully maximize the members' profit, no statements with respect to consumers' welfare are possible. There are some indications, however, that marketing agreements have a stabilizing effect on supplies and prices. To the extent that consumers benefit from a feeling of security spread by a "benevolent" control board, marketing agreements make a contribution; however, to the extent that consumers benefit from fluctuating prices, as certain theoretical analyses based on the concept of consumer's surplus appear to indicate, consumers may suffer a net loss.[5]

Although a similar statement can be made in regard to the price manipulating effects of marketing cooperatives, there is still the cost effect to be considered. As was said before, there are indications that in many cases cooperative efforts lower marketing costs. Such cost reductions will diffuse sooner or later and be reflected in lower prices to consumers. This process will take place because of the relatively high degree of substitutability for most farm products and the relative freedom of entry into farming and marketing of farm products, among other reasons.

### *Concluding Remarks*

A brief summary and appraisal appears to be in order. There can be little doubt that marketing agreements *per se* offer farmers a tool to manipulate levels of demand and shipments, and thus prices and profits. Control boards in the past have adopted and effectuated marketing policies which have a distinctive influence on the group's profits and losses without sufficient knowledge as to their effects. It may very well be that many control board actions were actually to the detriment of the group. The absence of acceptable devices to guide control boards' decisions makes these price manipulating efforts most hazardous and problematic as to their

[5] Waugh, F. V., "Does the Consumer Benefit From Price Instability?" *Quarterly Journal of Economics*, Vol. 58, No. 4, August, 1944. pp. 602–14.

effects on profits; while at the same time there is little reason to expect consumers to benefit from marketing agreements *per se*. Cooperative marketing, on the other hand, offers two means by which the profits of the cooperative's members can be enhanced; they can manipulate prices and affect marketing costs. Apparently cooperative marketing succeeded in improving the marketing system with the result of reducing marketing costs and prices to consumers. Cost reducing techniques of cooperative marketing are numerous and in the majority of cases lend themselves to relatively easy application and judicious adjustments.[6] Thus, there are some indications that in a sense cooperative marketing *per se* can be and has been beneficial to farmers and consumers.

In the light of this brief analysis it appears that in certain respects the century-old drive for cooperative marketing is judicious from the farmers' view. Thus, government assistance to foster cooperative marketing appears defendable from a welfare view and there are even good reasons why it should be extended further. With regard to marketing agreements there is, however, little unequivocal proof that they benefit farmers or consumers. With the introduction of statistical techniques, which can guide control boards so that their policy decisions are assured to be in line with the group's profit interest, the picture may change. Even then it would still be difficult to make a case in favor of marketing agreements from a consumer's welfare view.

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[6] Inasmuch as marketing cooperatives participate in marketing agreements, the end effects may include advantages from marketing cost reduction which are exclusively attributable to the presence of cooperative marketing. In empirical analyses such effects should be isolated and not attributed to marketing agreements, because they would exist just as well in the absence of marketing agreements.

# TECHNOLOGICAL CHANGES AND THE FUTURE OF RURAL LIFE*

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A BROAD definition of technological changes is used in this discussion. All technical, economic, and social changes that alter the way in which resources are used (1) in farm production, (2) in the farm home, and (3) in community institutions and services are included. We are concerned, therefore, with changes that take place both on and off the farm, and in both production and consumption.

Not all technological changes represent advance or progress. For example, the postwar automobiles differ in body styles from those manufactured before the war. Some features have improved serviceability, but the cars are so constructed that parking is more difficult and changing a tire on the road has become a major undertaking. Some people are worried about the modifications in cultural values that have accompanied technological changes. They would argue that technological developments have made no net contribution to human welfare. Perhaps the automobile, the movies, and the radio have not contributed greatly to human happiness. But they are here. Most of us would find it difficult to get along without these and other developments of the last half-century. Technological developments will continue to alter the environment in which we live. We therefore need to consider the impacts of such changes on rural people.

## *Agricultural Transformation*

As we are now completing the first half of the 20th century, it seems desirable to begin our discussion by considering the effects of technological changes on rural life in this country over the last 50 years. Table I summarizes the changes in use of farm equipment, volume of employment, total farm output, output per worker, and real income per worker. If we evaluate these data and other available evidence objectively we are likely to reach the conclusion that

* This paper expresses the writer's personal viewpoint on the problems considered. Helpful suggestions were received from R. W. Jones, Bureau of Agricultural Economics.

TABLE I. INDEX NUMBERS OF FARM POWER AND MACHINERY ON FARMS, FARM EMPLOYMENT, FARM OUTPUT, OUTPUT PER WORKER, AND REAL INCOME PER WORKER.

(1935–39 = 100)

| Year | Farm power and machinery[a] | Farm employment[b] | Farm output | Farm output per worker | Real income per worker[c] |
|---|---|---|---|---|---|
| 1900 | 80 | 105 | 73 | 70 | [d] |
| 1910 | 105 | 111 | 79 | 71 | 88 |
| 1920 | 126 | 104 | 92 | 88 | 80 |
| 1930 | 118 | 102 | 95 | 93 | 76 |
| 1940 | 106 | 97 | 110 | 113 | 102 |
| 1945 | 125 | 90 | 129 | 143 | 195 |
| 1946 | 130 | 92 | 134 | 146 | 195 |
| 1947 | 138 | 93 | 129 | 139 | 187 |
| 1948 | 151 | 92 | 140 | 152 | 170 |
| 1949 | 164 | 90 | 138 | 153 | 150 |

[a] Volume of farm power and machinery on farms valued in terms of 1935–39 average dollars.

[b] BAE series of total farm employment.

[c] Computed from BAE series on net income to farm operators plus farm wages. Net income per worker divided by index of prices paid by farmers for commodities used in family living to correct for changes in purchasing power of dollar incomes.

[d] Not available.

on the basis of economic criteria, farm people on the whole have benefited. The effects have not been all good, but they have been much more good than bad. And the levels of living for farm people have improved most in those areas in which the greatest changes have occurred. Some of the effects on the credit side might be listed as follows:

1. Work drudgery has been lessened both on the farm and in the farm home. More time has become available for recreation and personal improvement. Even when farmers work long hours the physical exertion is less than with hand operations.
2. Production for the market has increased in total, per farm, and per capita. This has provided more money for the purchase of more goods and services.
3. Capital accumulation has increased, and this facilitates further improvement in production efficiency and in levels of living. Unfortunately, however, a considerable part of the capital accumulation has been dissipated in higher land values.
4. Higher income per farm, and greater capital accumulation have made it possible for farmers in most areas to buy automobiles and other goods and services that enable them to belong to the same cultural group as those engaged in nonfarm occupations. In other words, the disparity in content of living between farm and nonfarm people has

been narrowed for the farm families that have been able to take advantage of technological developments.

5. Part of the increased income has gone into the support of improved community institutions and services. Perhaps not enough has been used in this way, but viewed historically, farm people in the good farming areas do have better educational facilities and other community institutions than were available 50 years ago.

These effects may be summarized by saying that in the areas most affected by technological change the production side of agriculture has been almost completely transformed—from hand and horse power to mechanical power operations, and from diversified production for home use to production largely for the market. The productive capacity of farmworkers has increased tremendously. Farming today requires less brawn and more brains and mechanical skills than it did 50 years ago.

Physical facilities in the home have changed less than have methods of farm production. But if we consider education and other activities outside the home, and also how automobiles have made these accessible to farm families, the changes may be equally great on the home side.

### *Benefits Unevenly Distributed*

It is necessary, however, to distinguish between the areas and classes of farms where most of these changes have taken place and the areas of small farms that have been largely bypassed in the march of technology. When farms are grouped into economic classes, chiefly on the basis of value of products and work off the farm, wide disparities in size of operations, as measured by farm acreage, gross value of production, and farm products sold, are evident.[1] Similar disparities are found in capital accumulation, as indicated by the value of land, buildings, and equipment.

This classification permits separating the *part-time and residential* units from those that may be regarded as *farming units*. The latter are farms which are operated primarily as a source of income, or to provide a living for the farm family, rather than primarily as a place to live. Estimates by the Bureau of Agricultural Economics indicate about 440,000 more part-time and residential farms in 1945 than in 1930, and 870,000 fewer farming

[1] See Bachman, Ellickson, Goodsell and Hurley, "Appraisal of the Economic Classification of Farms," this *Journal*, Nov. 1948, p. 683 ff. Also "Special Report, Sample Census of Agriculture," table 29.

units. In 1945, only about 4.3 million of the 5.9 million census farm units could be classed as farms that were primarily a source of income or living for the farm family. In the groups of *farming units*, however, nearly a million farms were classified as *small-scale*, with value of farm production ranging from $500 to $1,200 in prosperous 1944, and where the operator worked less than 100 days off the farm. These farms had an average of 22 acres of harvested cropland, and the total value of land and buildings averaged $2,305.

Farms of this size and income class apparently have benefited little by the technological changes of the last half century. As farmers in some areas have benefited a great deal, the disparity in farm incomes has widened. Some of the farm families on the *small-scale* farms may have other sources of income; and some undoubtedly represent partial retirement units for older people. But the evidence is fairly clear that a large percentage of the families on these farms depend for a living upon a meager income from farming.

Although it is not possible from available data to locate the small-scale farms with precision it is apparent that they are concentrated in areas such as the Appalachian Highlands, the Ozark and Ouachita Mountains, the eastern part of the Cotton Belt, the cut-over areas of the Lake States, and smaller concentrations in other parts of the country. These are either areas of general farming with emphasis on production for home use, or areas in which cash crops, such as cotton or tobacco, are still produced as hand-labor enterprises. They also tend to be isolated from centers of industrial development, but many "islands" of small-scale farming are in close proximity to industrial centers.[2]

In areas in which *small-scale* farms prevail these farm families have had very little access to the benefits of improved technology. The farms are too small and the resulting incomes too low to permit purchase of labor-saving equipment, either for farm or home. In 1945 only nine percent of the small-scale farms had tractors, only 15 percent had telephones, and only 13 percent had running water. Even if it were possible to acquire labor-saving equipment,

[2] T. W. Schultz, in a paper presented at the 1949 annual meeting of the American Farm Economic Association, attributes the disparity between such areas and the more prosperous farming areas to "the way in which the economy of the United States has developed." He stresses the cultural impediments to participation in economic progress.

the labor on these farms is supplied by members of the family, and in many instances, no other productive employment would be available for the labor released in the shift to labor-saving methods. These farmers would incur costs of such equipment without compensating income benefits.

The concentrated small-scale farming areas have lagged behind in improvement of community institutions and services as well as in farm and home techniques. The low incomes prevailing in the entire community have not permitted support of adequate schools, roads, and health facilities. As population increases also tend to be greater in these areas, the disadvantages are accentuated by added costs of rearing the younger generation.

### *Problems Generated by Technological Changes*

It is apparent from an examination of relevant data that farm people have not shared equally in the benefits of technological changes. Nor have these developments been an unmixed blessing even to farm people in the areas in which most of these changes have taken place. Commercial production for the market, and purchases of power, fuel, and other products formerly produced on the farm, make farmers more vulnerable to external economic changes. As one who lived in the Great Plains region during the years of drought and depression, the writer is not unaware of these impacts on commercial farming.

The surplus spectacle of the interwar years, which appears to be staging a repeat performance, was rooted strongly in technological change. The shift from animal power to mechanical power in farm production since 1920 has released more than 60 million acres of cropland from production of feed for horses and mules to production of marketable farm products. That is about a sixth of our total cropland. And this is only one of the factors responsible for the marked expansion in the total output of marketable farm products. Crop improvements (such as hybrid seed corn), increased use of commercial fertilizer, conservation practices, pest and disease control, and many other factors might be mentioned. These improvements made it possible to meet our war emergency needs for food and fiber. If we had not been able to utilize the technical advances of the interwar years it would have been necessary to shift a much larger portion of our labor and capital into food production in World War II. But now we have a farm plant which, with average

weather, is capable of producing 40 percent more than our prewar output. The special demands of the war emergency, combined with other factors, have resulted in a pattern of production that is badly unbalanced from the standpoint of peacetime markets.

It would be easy to blame too much of our present unbalance on technological changes. We need a better understanding of these forces. Then perhaps it will be possible for farm people to make better adjustments to the changing situation. We are not going back to the "good old days." And if we are honest with ourselves, those days were not so "good" in comparison with present levels of living in our better farming areas. It should be possible to steer our course in such a way that farm people will reap greater benefits from scientific progress than they have in the past, and that those benefits will become more widely distributed.

### *Economic Consequences of Technological Changes*

It may be helpful to trace some of the economic effects of technological changes as a background for suggestions as to how science might serve rural people more effectively.[3] Technological improvements frequently are associated with larger output of the products affected by the change. This is not always the case because some improvements save labor or capital investment without increasing farm output, but most of them do result in larger marketings of farm products.

When the demand for farm products is expanding at least as rapidly as the products going to market are increased by technological advancement, the market absorbs the larger output without reduction in prices. The general economy then benefits from the improvement because the increased output prevents a rise in prices. But, if production increases faster than the demand for the product, prices are likely to go down. When that happens a part or perhaps all of the gain from the improvement is shifted away from farmers to other groups.

But the general economy still may benefit because farm products are obtained more cheaply than before the improvement was made. In this case, however, we need to look also at the immediate effects on employment. If the improvement displaces a large amount of

[3] For a more complete statement by the writer, see USDA Misc. Pub. No. 707, "Changes in American Farming." The article by Earl Heady, entitled "Basic Economic and Welfare Aspects of Farm Technological Advance" in the May 1949 issue of this *Journal*, Vol. XXXI, No. 2, is an excellent analysis of economic effects.

hired labor, as for example, the cotton picker, it makes a big difference whether it is introduced at a time when other employment is available for the displaced labor; or whether it comes in a period of unemployment when the workers who are displaced cannot find other work. If the displaced workers must be supported by various types of unemployment insurance or work programs, the net gain from the improvement may be partly offset by the cost of work relief.

Over a longer period of time, however, improvements in farm production benefit the general economy. Looked at historically, the release of farm workers from agriculture has furnished the labor force for the development of our urban industry, and the basis for our present high level of living. If fewer resources are needed in producing farm products, more can be used in other productive lines—provided they can be transferred to new uses, and provided the economy is geared high enough to use them effectively. The long-time benefits of such shifting perhaps can be seen best if we contrast the situation in this country with the areas of the world in which half or more of the working population is engaged in agriculture.

The effect of technological change on the physical productivity of labor in agriculture may be summarized in this way: In 1945, one farm worker produced enough to provide himself and about 14 other persons with agricultural products. In 1920, he produced enough for himself and nine other persons. About 100 years earlier, or in 1820, one farm worker produced enough for himself and only a little more than three other persons. We may conclude that, from the standpoint of the economy as a whole, and taking a longer time view, the results of technological advances are beneficial. We cannot afford to stop the march of progress.

Let us turn now to the economic effects of technological changes on farmers, again both immediately and over a longer period. Whether an improvement lowers costs without affecting output or results in an increase of farm products, the farmers who first adopt it will retain whatever gain results, *until or unless prices of farm products are affected.* Therefore, those farmers who adopt an improvement which actually reduces costs always gain in the early period of its adoption. Farmers who do not make the change are not affected by the improvement until or unless prices of farm products decline. But we have seen that if the improvement results

in labor displacement, hired labor may be adversely affected, unless other employment is available that pays as well as or better than the work from which they were displaced.

Many agricultural economists have been pessimistic about the potential long-term benefits to farmers of technological developments because they have not realized how frequently *new production combinations* enable farmers to produce more products at a lower *total cost* than was formerly incurred for a smaller output. They have thought more about the potential effects of single improvements which reduce unit costs, but at the same time increase output and therefore tend to be offset by lower prices.

Farmers quite generally have made new production combinations during the last quarter-century that actually reduce *total costs*. To illustrate with a Corn Belt farm, suppose that adoption of mechanical power and associated equipment is combined with use of hybrid seed corn, commercial fertilizer, and more legumes in the rotation, all of which will result in higher yields of corn and other crops. These in turn make more feed available for livestock, and better feeding can then be combined with other improvements in livestock practices. This "chain type of reaction" may have the following results:

1. Mechanical power enables the farm family to do all the work with little or no hired labor.
2. The investment and current operating expenses for power and machinery are little if any higher than when the farm was operated with animal power.
3. Production per acre, per farm, and per worker has been greatly increased, but the hired labor bill has been almost eliminated and there are only small increases in other operating expenses.

Sometimes the farm family decides that they can operate more land and they rent an extra quarter section—one that was formerly operated by another family. Such farm enlargement greatly increases output per worker. But another family has been released for other types of employment. The farm-operator families and the hired farm labor released by this process are also farm people. We need to be concerned with what happens to them as well as to the operators who remain in farming. Whether the effects on those who leave the farm are favorable or unfavorable depends upon the type of employment opportunities available to them.

The magnitude of labor shifting in the North Central States over a 20-year period is indicated by Bureau of Agricultural Economics

data on farm employment. Hired workers on farms averaged 49 percent fewer in the years 1945–48 than in 1925–28. The decrease in hired workers for the entire country in the same period was 26 percent, and the total number of hired and family workers decreased 12 percent.

This hurried examination of the economic effects of technological changes does not indicate that we should place any brakes on the program of more efficient farming. Individual farmers who adopt cost-reducing combinations are likely to gain from them, both immediately and over a period of time, regardless of whether or not they are associated with an increase in output. And agriculture cannot afford to remain static in an ever-changing national economy.

### *Can Science Serve all Farm People?*

So far the benefits of improved technology have not been available to *all* farm people. Is it possible for science to serve the operators of small farms as well as those on large farms, and hired laborers as well as farm operators? Is an *improvement level for all farm people* a feasible goal?

As background for dealing with this question we need to consider the type of environment in which agriculture is likely to be conducted in the next two decades. Assuming progress toward a stable peace, we can be quite hopeful about general economic progress in this country, and about gradual world recovery and restoration of international trade. A less hopeful view of the future necessarily also would visualize many stresses and strains in various sectors of the agricultural economy that would not arise under conditions of relative prosperity. Commercial agriculture is highly interdependent with the rest of the economy. But the more hopeful view is not just wishful thinking. We are committed to a policy of high employment. And this, combined with anticipated increases in population, means larger markets for farm products. We also have programs designed to aid in stabilizing farm incomes.

Within agriculture itself some changes seem fairly certain. We can safely predict a continuation of the shift to mechanical power until it has largely supplanted animal power. Further progress is to be expected in crop and livestock improvements, use of lime and fertilizer, conservation, pest and disease control, and other improved practices. These will be combined with further mechani-

zation into *production combinations* that are much more effective than they would be if adopted as single practices.

Family farms are likely to become larger and somewhat fewer as the productive capacity of farm workers is increased by the newer techniques. Fewer workers will be needed in full-time farming. Commercial farming will become a more complex undertaking as technological advances continue. This means that adequate training and managerial ability of a high order will be needed for successful operation.

Many changes that are now unforeseen will occur. For example, we have no basis for predicting the impact on agriculture of atomic energy developments. Innovations of one kind or another may be even more significant over the next two decades than the changes which are now on the horizon. But their effects on agriculture are likely to develop more slowly because a period of testing of new developments usually is required, and adoption by farmers is a gradual process.

If we are to go forward toward an *improvement level for all farm people* we need to consider also what might constitute a desirable structure of agriculture in an environment characterized by technical, economic, and social progress. At present we can do no more than outline some goals that seem worth striving for. But in outlining these goals we should recognize that neither the direction nor the speed at which we travel are fixed by laws of nature. They are subject to human choices. They can be modified by human effort and by man-made institutions.

1. Equality of economic opportunity might be set as our first goal. This would require an agricultural economy in which farm people would have opportunity to earn real incomes equal to those available in other occupations for the same skill and managerial ability. If farming is to attract and hold its proportionate share of the capable youth who are choosing their life occupations they must be able to look forward to income opportunities in agriculture that compare favorably with earnings in other fields. Otherwise we may tend to develop a peasant class in agriculture. Equality of opportunity therefore becomes most important for the younger generation growing up on farms.

2. There should be sufficient opportunity, especially for the younger people, to transfer to other occupations so that only those who are likely to find the best outlet for their talents in agriculture will be employed in farming. This goal is a corollary to the first because the birth rate in most rural areas is higher than is needed to replace the present number of farm workers; and adoption of labor-saving techniques will continue to release workers for other occupations. The road to nonfarm employment, there-

fore, must be open and attractive to those who are not needed in agriculture if those who remain are to obtain satisfactory incomes.

3. Those who are likely to find their best economic opportunity in agriculture will differ greatly in skill, training, and personal preferences. There will be need, therefore, for a complete array of sizes and types of farms to fit the varying abilities, preferences, and personal situations of farm people. With an even wider spread of improved technology the downward trend in hired farm workers should continue, although some will still find farm wage labor their best source of employment.

4. Owner-operatorship of family farms long has been one of the principal goals of agricultural policy in this country. Certain welfare values associated with the family farm are harder to obtain in alternative kinds of organization of farming. It seems desirable, therefore, to maintain the family farm as the *prevailing business unit* in agriculture. This need not conflict with the need for a complete array of farm sizes to provide for people of varying abilities and personal situations. Although family farms of adequate size should constitute the large middle group of business units in agriculture, there is a place for large-scale farms operated by persons of exceptional managerial ability. To close the gate on individually-operated large-scale farms would be inconsistent with providing equality of economic opportunity for persons of varying ability, unless we place similar limits on other enterprises. On the other hand, the economic balance should not be tilted to favor large-scale farms.

All available evidence indicates that family-operated farms which are large enough to utilize labor-saving equipment and other improved techniques usually can compete effectively with large-scale units. Farms too small to make efficient use of these improvements, however, may operate at a considerable disadvantage compared with larger units. Nevertheless, many persons find their best opportunity in agriculture, although for reasons of health or other factors they are unable to operate family farms of efficient size. The farm size array, therefore, will need to include some *small-scale* units, but special types of assistance should be developed to improve operating and living conditions on such farms. This subject will be dealt with later.

5. Modern transportation makes it possible for more people to combine rural living with nonfarm work. If nonfarm employment opportunities are developed in areas in which small-scale farms are now concentrated, it would be possible for a large number of farm families to shift from full-time to part-time farming, or perhaps to use the farm chiefly as a place to live. Many families now living in cities and towns might also prefer to combine nonfarm employment with living in the open country. Rural homes for persons engaged in other occupations would provide more people with "roots in the earth," which seems desirable from the standpoint of national stability. But the farm should not be regarded as an employment refuge for unemployed in periods of depression.

6. Considerable improvement in community services and institutions will be required if equality of economic opportunity is to be provided for young people growing up on farms. This is especially true of areas in which

small-scale farms are now concentrated, because these areas lag in education, health, and other community services.

### *Facilitating Improvement Goals*

If there is general agreement on these *improvement goals*, how can progress in this direction be facilitated? Achievement would require more and better agricultural research than we have had in the past. It would involve more effective educational and other programs to speed adoption of new developments. We have ample testimony regarding the effectiveness of publicly financed research that is directed toward improving technical efficiency in farming. But research, educational, and other programs should be directed more specifically toward achievement of the goals listed. This would mean greater emphasis on the economic and social aspects of emerging farm problems. For example, on the production and marketing side, we need to work out ways of achieving production combinations that will reduce total costs on farms, and production shifts that might be needed to restore and to hold economic balance between production and market outlets. For improvement in farm living we need to stress research and other measures that will result in better housing and home conveniences, in more adequate health facilities, and in higher standards of education.

But another type of redirection of research, education, and other programs seems even more necessary if we are to achieve an *improvement level* for *all* the farm people who are affected by technological change. *These efforts should be directed specifically toward aiding the groups that in the past have been disadvantaged by technological change and those that otherwise would be likely to benefit least from agricultural improvement.* Sometimes all the farms in a large area are adversely affected by new developments. For example, extension of cotton production to the high plains of Texas and Oklahoma and the irrigated areas of the Western States had a major impact on the eastern part of the Cotton Belt. Those who are most likely to be disadvantaged by technological changes in commercial farming areas are farmers who for some reason cannot adopt the new improvement and hired workers who are displaced by a labor-saving development. Unfortunately, the technological changes of former years have left many islands of *small-scale* farms that are almost untouched by the benefits of these developments, although they have not escaped the unfavorable impacts.

Because the general economy benefits a great deal from tech-

nological improvements in agriculture, it seems justifiable to utilize a part of these gains for public investments to aid those who are disadvantaged by such changes. Two general types of public investment for this purpose might be considered: (1) Aid to those remaining on farms, and (2) special encouragement of transfers to other occupations.[4]

Many farm families could work out programs of income improvement on their present farms. Aid to these families might consist mainly of rendering a *management advisory service* to help them adopt improved systems of farming. This would be one way of bringing the benefits of science directly to the attention of operators of low-production farms. Helping these farmers think through the problem of adapting improved techniques would reveal gaps in our information that would call for specific research on such farm problems. Some families would need credit aids also and other assistance for enlargement of present farms in order to achieve an adequate production base.

Other farm families might not be in position to convert their farms into efficient operating units; and still they might not have the opportunity to transfer to other occupations. Some of these farms are semi-retirement units. But there should be ways to lighten the work burden and to improve living conditions on such units. Other farms in this class may be operated by farmers in the younger age groups who for some reason find their choice limited to obtaining the best income possible on small farms or joining the group of hired laborers. Research and education needs to be directed toward ways of improving income opportunities and family living conditions for the present generation of farmers on small-scale farms operated under those conditions. Would it be possible through research to develop types of farming with relatively low land and equipment investment requirements, and a high return on direct labor that would provide a more adequate living for those who cannot acquire and operate efficient family farms, but who still find their best income opportunities in farming?

What kind of assistance can be given to those who will find their best opportunities as hired farm workers? Better housing and more adequate security against unemployment, illness, and old age are

[4] Secretary Charles F. Brannan recommended a program of assistance to operators of small farms and hired farm workers in his testimony before the Subcommittee on Low Income Families of the Joint Committee on the Economic Report, December 15, 1949.

important considerations. Some of these protections are now provided for hired labor groups in other occupations. Can they also be adapted and extended to hired farm workers?

The biggest part of the job of helping those who are disadvantaged by technological changes will consist of aid and encouragement to those who are likely to find their best income opportunities in nonfarm occupations. Many today are ill-prepared for such transfers because of low educational attainment, health handicaps, or lack of training and special skills for specific types of nonfarm work. They have little knowledge of where other employment might be obtained, and no funds for moving expenses. To pull up roots from the old environment and to transport oneself to a new location and a new occupation requires considerable courage, combined with a strong desire for the attractions of the new mode of life. Such transfers have been made fairly readily by young people who have grown up on farms fairly close to industrial centers, or who have come in contact with nonfarm opportunities in other ways. The abandoned land in southern new England is strong evidence of the operation of this process. But in Northern New England there are still islands of relative isolation and continuation of subsistence farming.

Because of strong resistance to change, a program of public investment in these fields probably should begin with education and health services for the children who are growing up on *small-scale* farms, or in the families of hired laborers. It would also be desirable to bring to their attention more knowledge of what is going on in the outside world. This would facilitate escape from an unfavorable environment.

Vocational guidance is a relatively unexplored field that appears to offer real promise for assistance to farm youth in the more congested rural areas. But this guidance needs to be combined with adequate training for the occupations to which different individuals are best suited. The national interest in a well-trained citizenship appears to justify special scholarships for the best adapted and most promising high school graduates who could not otherwise obtain further training. These might provide either for college or for vocational training. Such scholarships would open the door of opportunity for those of outstanding ability who would not otherwise become properly trained for their life work.[5]

[5] See article by writer, "Training Rural Youth" in *Land Policy Review*, Vol. VIII, No. 3.

Placement aids will be needed to inform potential workers of employment opportunities. Some workers will need financial assistance in transferring to new locations.

There has been considerable hesitancy in providing public investment for aids of the type just described. But if we want to speed up improvement of earning power in congested rural areas, public investment will be necessary. Unfortunately, from the standpoint of public support of such measures neither urban people nor farmers in the good farming areas have much conception of actual conditions in the congested rural areas. No surplus is available in low-income areas for private investment in health, education, and training. And the communities cannot afford adequate local institutions that provide these services. From a strictly financial standpoint, investments in the conservation of human resources might yield much higher returns in increased earning power than equal investments in protection of land resources. The need for public investments in land conservation is now widely recognized, but the need for similar investments in human conservation is not so generally understood.

From the standpoint of economic benefits to the people who remain on farms, public investments to aid those who are no longer needed in farming are likely to return higher dividends over a period of years than more direct aids to agriculture. Migration of workers from farm occupations is necessitated both by the increase in farm population above replacement needs and by the release of workers as a result of technological change. It is only possible to maintain high production and high income per worker when those who are not needed in farming find the road open to nonfarm employment. In addition to training and preparation for travel on this road, it is essential to maintain high levels of nonfarm employment. This may also require special programs even in an expanding economy such as we prefer to visualize for the future.

The answer to the question as to whether science can be enlisted to serve *all* farm people seems to be yes. It can, but it will require redirection to avoid unfavorable effects in the transition period. Eventually, all farm people, and the economy generally, will benefit from technological developments; but the transition stage might be long and painful without considerable redirection of effort, and public investment, to help those who otherwise would be disadvantaged until the full cycle has been completed.

# UNCERTAINTY IN MARKET RELATIONSHIPS AND RESOURCE ALLOCATION IN THE SHORT-RUN*

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HISTORICALLY, the theory of production has focused on the single-product firm. Although some analysis has related to the multiple-enterprise firm, the latter area has not been sufficiently explored. For reasons brought out later, the problem is of particular interest to the agricultural production economist and others concerned especially with resource efficiency.

Two classical studies in the economics of the single-enterprise firm are those of Viner[1] and Stigler.[2] Aside from the skirmish lost to the draftsman, Viner's distinction between short-run and long-run cost curves has become accepted doctrine. The analysis is entirely static, however, in the sense that it does not relate to anticipations and variability in production. Stigler extended cost analysis to non-static production wherein the single-product firm relates present cost structures to the anticipation of future commodity prices and where the magnitude of variations in the latter may not be predicted with certainty.

We extend analysis to the multiple-product firm.[3] The problem is one of the optimum combination of enterprises under uncertainty. First we distinguish between the short-run transformation curve and the long-run planning curve. Next we outline the possibilities which face the firm in building enterprise flexibility into its short-run plant when it expects product prices of the future to vary rather than to remain in fixed ratio. Finally, we analyze the resource cost to the firm and society growing out of market price instability. Our applied examples are drawn from agriculture.

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[1] Viner, J. Cost Curves and Supply Curves, *Zeitschrift für Nationalokonomie*, 1932.

[2] Stigler, George. Production and Distribution in the Short-run, *Journal of Political Economy*, 1939.

[3] The author has a detailed paper which explains the specific nature of the transformation curves presented here. In addition, many others and their ramifications on enterprise combinations are specified. Interested readers may have an opportunity to examine these.

The problems which revolve around diversification and multiple-products units are more numerous in this than in many other industries because of the seasonal and biological characteristics of production and because of the extent of capital rationing; the major portion of agricultural products are forthcoming from firms which combine two or more products. However, our analysis is generalized and is equally applicable to other areas of production wherein two or more enterprises compete for scarce resources.

*Short-Run Adjustments in Farm Production*

Agriculture is notoriously slow in its adjustment to changing economic conditions. A common observation has been that agriculture has a strong tendency to maintain its short-run output even as short-run price-cost ratios vary widely. While other industries sharply restrict output during depression because of the unfavorable relationship of factor costs to commodity prices, agriculture goes ahead with production as if marginal cost-marginal revenue relationships were only slightly altered. There are at least three important reasons why agricultural production fluctuates only slightly throughout the commodity and trade cycles: (1) A major portion of the inputs of agriculture are in the nature of fixed costs in the short-run. Labor is the major input and since it is composed largely of operator and family workers, its use does not vary greatly with short-run changes in commodity or factor prices. While use of labor on farms does respond to long-run or secular returns its movement is sluggish even then. The cost of the land input is also largely fixed, especially in the sense that this resource is a residual claimant and cannot be transferred easily to other industries. Similarly, a major portion of the capital resource is of fixed nature in the short-run; farm buildings and much of the machinery and equipment investment fall in this category. Resource inputs which are of variable nature in the short-run and hence affect marginal costs include mainly hired labor, seeds, fertilizer, tractor fuel, machine repairs and factors which are generally transformed into product within a single period. These latter resources constitute the smallest portion of the composite agricultural resource input. (2) The farm firm generally operates within a framework of limited capital. Accordingly, the focal task is perhaps not one of equating marginal cost and marginal returns within each alternative (enterprise) but rather one of allocating

limited resources between the various alternatives in a manner to equate marginal value productivities (an equilibrium wherein direct marginal costs are less than marginal revenue for each single alternative except in the sense of equating subjective quantities under uncertainty). Thus as the product-price/factor-cost

TABLE I. COEFFICIENT OF VARIATION FOR SELECTED FACTOR INPUTS AND PRODUCTION UNITS IN AGRICULTURE, UNITED STATES, 1930–47* (%)

| Item | Coefficient of variation | Item | Coefficient of variation |
|---|---|---|---|
| *Factor inputs* | | *Production Units* (con't) | |
| Acres land in 52 major crops[a] | 4.9 | All cattle except dairy[d] | 15.9 |
| Number of workers[b] | 4.1 | Cattle on feed[d] | 19.1 |
| Capital investment in livestock[c] | 7.2 | Milk cows[d] | 5.1 |
| | | Sheep & lambs on feed[d] | 48.2 |
| | | Acres corn[e] | 21.0 |
| *Production Units* | | Acres wheat[e] | 10.9 |
| Pork output[d] | 33.7 | Acres soybeans[e] | 43.3 |
| Spring sows farrowed[d] | 18.3 | Acres flax[e] | 42.7 |
| Hens and pullets[d] | 12.1 | Acres cotton[e] | 28.3 |
| Turkeys[d] | 13.8 | Acres potatoes[e] | 13.7 |

* These data substantiate our thesis that a greater variation exists in the exact allocation of given land and labor resources between products than in the total quantity of resources employed. We have been unable to measure the annual input of buildings but certainly this resource does not vary as greatly from year to year as does the use to which buildings are put. The coefficients of variation indicate only small short-run changes in the aggregate quantity of the three factors but a relatively wide variation, especially for selected products. The period under consideration includes adjustment to governmental programs per se, as well as related price. This is, however, an element in short-run resource allocation which must also be considered by the firm in constructing its plant.

[a] Basic data from *Crops and Markets*, January, 1948. Includes hay and pasture but excludes double cropping.

[b] Basic data from *Farm Wage Rates, Farm Employment and Related Data*, Bureau of Agricultural Economics, January, 1943. Figures for 1943–47 from *Farm Labor Report* published monthly by the Bureau of Agricultural Economics.

[c] Data are from *Agricultural Statistics*, 1948. Values have been adjusted to a 1937–41 price basis for the different species to more nearly indicate physical quantities or value (aggregative) with effects of changes in value of the dollar eliminated.

[d] Basic data from *Agricultural Statistics*, 1948. Figures indicate numbers on farms on January 1 except for pork produced and sows farrowed.

[e] Basic data from *Crops and Markets*, January, 1948. Figures are planted acreages except for cotton, which is number of acres in cultivation on July 1.

ratio falls, the firm may find that marginal revenue still exceeds marginal cost even if its original aggregative output is maintained. It thus still may be profitable to maintain the previous aggregative level of production (if the original quantity of resources is still on hand and to the extent that credit agencies do not withcall loans).

Given a setting of uncertainty, however, the firm may restrict output in the sense of "equating" discounted returns and costs. (3) Even though the farm operator may cut back in application of some resources (and he certainly does for fertilizer and other resources where the input was not committed in a previous production period) he is able to provide an offset by shifting production of the future back to the present by drawing heavily on the soil and other resources. Ordinarily, "present" farm production is expanded at the expense of the "future" by also shifting to soil depleting or exploiting crop enterprises. Too the firm may curtail building repairs (inputs for which the product is forthcoming in later periods) and invest in current enterprises.

We do not imply that agriculture is not responsive to price changes in the use of resources. Data indicate a definite secular trend in the total employment of capital, labor and land in agriculture. The change in labor has been downward and land has been slightly upward. While capital perhaps has not changed greatly in total physical quantity there indeed have been wide changes in the specific forms of capital. Our main point is that while the total quantity of resources employed does not change greatly over short periods there are important reallocations within the framework of an otherwise fairly constant aggregate of resources employed. This hypothesis is supported in Table I. As the data indicate, there are wide swings in the use of agricultural resources between enterprises from "year to year." On the other hand, the "year-to-year" variance in the quantity of selected resource inputs is much less.

Accordingly, we contend that while Stigler's problem of short-run cost flexibility for a single enterprise firm is of paramount interest in many industries, the problem of short-run enterprise or allocative flexibility is perhaps equally or more important in many segments of agriculture. In addition to variations in commodity price ratios growing out of the business cycle, agriculture is also more directly concerned with changes in ratios growing out of cob-web phenomenon known as the commodity cycle. In the analysis which follows we use "short-run price changes" to refer to those growing out of (a) cycles for individual commodities (hog cycles, cattle cycles, potato cycles, etc.) and (b) the business cycle (in contrast to long-run or secular price changes). The term "short-run" in production refers, of course, to a plant with specialized

resources (in contrast to the long-run or planning stage where resources are not in specialized form but can be adapted in any manner).

*Competitive Firm*

We restrict our study to the problem of resource allocation by a competitive firm. The analysis which follows is in the vein of a "pure" case. Our model is built around a firm with a given quantity of resources (whether these be owned or borrowed up to the limit imposed on the firm by itself or credit agencies because of uncertainty) and the opportunity to produce two competing enterprises. The iso-outlay or transformation curve is employed as the central tool of analysis. Our objective is to define the combination of

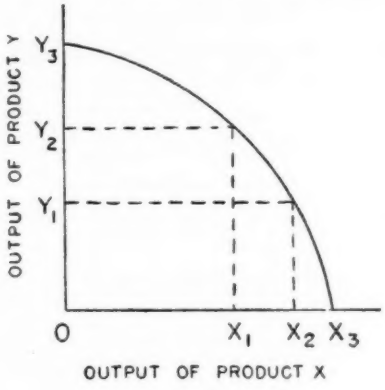


FIG. 1

products (enterprises) which will maximize returns for a firm with a given stock of resources (costs). The form of the resources (total outlay) are specified to conform with the particular stages of economic choice. Resources thus can be considered in the form of money or other liquid assets (or uncut lumber for buildings, raw materials, labor and other still completely unspecialized but specific resources) in the planning (long-run) stage. The short-run refers to commitment of a portion of these given resources to specialized form (buildings, machinery and equipment economically and technically "best adapted" for particular products).

*Long-Run Transformation Curves*

Our first distinction is between short-run and long-run allocative opportunities. Previous literature has not made this distinction.

It can be illustrated best by means of the conventional opportunity or transformation curves such as that of Figure 1.[4] In review, $Y_3X_3$ is an iso-resource (or iso-outlay) curve illustrating the production opportunities for a firm producing two commodities $X$ and $Y$. The iso-resource curve indicates all the possible opportunities which face the firm and which require equal resource (cost) outlays (e.g. all possible combinations of two commodities which can be produced by a firm with given resources). The abscissa of each point on the iso-resource (equal resource) curve represents the relevant quantity of product $Y$ while the ordinate represents the relevant quantity of product $X$. For example, the given outlay of resources might be used to produce the combinations $OY_1$ of product $Y$ and $OX_2$ of product $X$ or $OY_2$ of $Y$ and $OX_1$ of $X$. The firm can also produce $OY_3$ of commodity $Y$ and none of $X$ or $OX_3$ of $X$ and none of $Y$ or any other combination consistent with the curve $Y_3X_3$.

The slope of the curve at each point reflects the marginal rate (elasticity) of substitution of one product for the other. In the sense of a given resource outlay, it thus represents the marginal cost of $Y$ in terms of $X$ and vice versa; the slope indicates the quantity of the one product sacrificed as the output of the other is increased. The fact that $Y_3X_3$ is convex to the origin indicates that the two commodities substitute for each other at an increasing marginal rate; increasingly greater quantities of $Y$ must be sacrificed for each successive unit of $X$ added (and vice versa). Constant marginal rates of substitution would be indicated by a linear (straight line) transformation curve (equal quantities of $Y$ are sacrificed for each added unit of $X$).

### *Short-Run Iso-Outlay Curves*

However, $Y_3X_3$ in Figure 1 represents the allocative opportunities which face the firm before it has committed any resource to specialized form. This opportunity curve is important only in the

[4] The transformation curve is derived from separate production functions for two commodities. To minimize space (see later discussion) we use a production function with an elasticity of less than 1.0 (throughout) for both commodities. We also exclude decreasing total returns for either product (and hence a complementary opportunity curve) since this is a special case of the general principle (also, the case of joint products and complementary relationships have been discussed elsewhere. See Heady, *Economics of Rotations with Farm and Production Policy Applications*, this *Journal*, November, 1948). Too, decreasing total returns for either commodity and hence a "complementary" transformation curve is excluded as "economically irrational."

stages of planning. A farmer with access to (say) forty thousand dollars, has the choice of any one of these alternatives before he has bought land, constructed buildings or other equipment, purchased livestock and supplies and has hired labor. Now suppose that he selects some combination such as $OY_1$ of $Y$ (poultry) and $OX_2$ of $X$ (hogs) in Figure 1. He then converts part of his assets to specialized form as he acquires land, and erects a hog shed, poultry houses and similar specific equipment. Given correct expectations of transformation coefficients and aside from variations in the production function for each enterprise, it is technically possible to go ahead with output of the two commodities in the proportions selected. Now suppose that after resources have been committed and production has gone ahead for several periods in the proportions selected originally, the management decides to alter the combination of the two products by expanding hogs and contracting poultry products. The long-run opportunity or planning curve then has historic interest only; resources are now in specialized form. The decision may arise as the relative prices of pork and poultry products change over time. However, as hogs are substituted for poultry, he will no longer move along the long-run transformation curve ($Y_3X_3$ in Figure 1) if specialized resources are to be used and the total resource outlay or cost is to remain unchanged. (Exceptions are noted later). Hog equipment must now be used for poultry and vice versa. Of course, not all the resources used previously for poultry need be in specialized form. Certain feeds and other raw materials can be transferred readily between enterprises. Labor may or may not be equally skilled for poultry or pork production. Poultry can be sold and the funds converted into brood sows. However, the poultry houses are not readily converted to farrowing houses. If the poultry houses are used for farrowing pigs, disease and other biological phenomena may curtail production of the latter. From an engineering standpoint, the building layout and equipment for poultry may result in inefficient use of labor when these same buildings are employed for pork production. Or, if the specialized poultry resources are not used for hogs, pork output can be expanded by transferring food and labor to a more intensive use of the specialized hog equipment (e.g. by raising more hogs in given hog houses or by growing a given number of hogs to heavier weights). Again, however, biological and mechanical phenomena will result in an output less than

proportionate to the feed, labor and other unspecialized resources transferred from poultry production.

Thus although the firm starts from a given point (A) on a long-run iso-outlay curve (*MN* in Figure 2) it faces the short-run iso-resource curve (*mn*) as it attempts to substitute one product for another after resources have been committed to specialized form within the plant. In Figure 2, the long-run opportunity curve

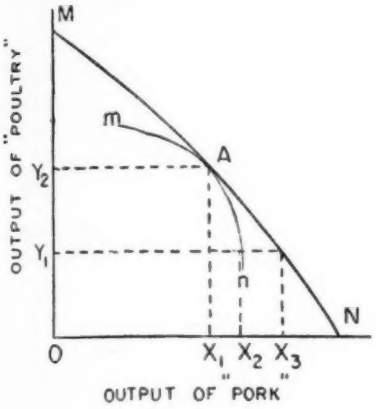


FIG. 2

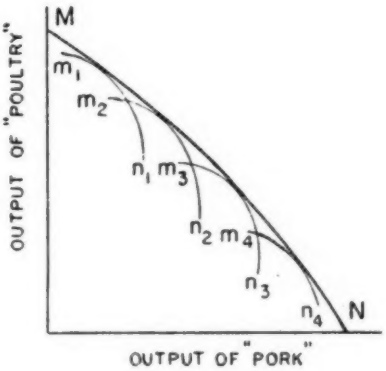


FIG. 3

*MN* represents the same total outlay of funds as does the short-run transformation curve *mn*. At the point *A*, the same combination total output and marginal rate of substitution of the two commodities is indicated by either opportunity curve. However, the marginal rates of substitution away from this combination (*A*) are entirely different. By contracting "poultry" from $OY_2$ to $OY_1$ on the long-run opportunity curve, "pork" could be expanded by $X_2X_3$. (This is an alternative which exists in the planning stage only.) However, by decreasing "poultry" from $OY_2$ to $OY_1$ on the short-run curve (after commitment of resources to specialized form) the gain in "pork" output is only $X_1X_2$.

A short-run transformation curve exists for each point on the long-run planning curve (Figure 3). The long-run opportunity curve is (a) tangent to each possible short-run opportunity curve and (b) in this sense, the envelope of the family of short-run curves. All the possible short-run curves consistent with a single long-run curve represent the same total outlay of resources (and are also equal to the outlay represented by the long-run curve). The long-

run curve expresses the maximum output of one product which can be produced for each possible output of another product. Therefore, it can never lie below (intersect) any one of the short-run opportunity curves. The elasticity of substitution of one product (poultry) for another (pork) is always less for any single short-run transformation curve than for the long-run opportunity curve (except at the point of tangency).

The slope of each of the family of short-run curves is more nearly a function of (a) proportionality and (b) lack of adaptability of resources specialized for particular commodities, while the slope of the long-run curve is more closely related to returns of scale. A shift of resources from pork to poultry can be made in the short-run (total outlay held constant) as the existing numbers of hogs are fed to heavier weights, more hogs are raised in existing hog houses, and as similar rearrangements are made in proportions of specialized hog resources with unspecialized resources. Thus in light of the classical concept of diminishing returns smaller and smaller increments of pork can be expected as successive increments of grain, labor and other unspecialized resources are transferred from the poultry enterprise. Conversely, as each single unit of unspecialized resource is withdrawn from the poultry enterprise, it will entail increasing sacrifices of the latter product because the intensity of resource application is becoming less and less (the marginal productivity per unit of resource increases as the number of units applied decreases). Pork can also be increased in the short-run at the expense of poultry by farrowing pigs in the hen houses. If this procedure increases sows by $x$ percent and decreases hens by $z$ percent, labor, feed and other unspecialized resources also may be expanded by $x$ percent for hogs and contracted by $z$ percent for poultry. Changes thus need not occur in proportions of resources employed in pork production (if buildings of different forms are not looked upon as different resources). However, if the best adapted specialized houses for poultry are not also technically as efficient for hogs as buildings adapted for hog production, pork output may not be increased by $x$ percent. For the long-run opportunity curve wherein no resources need be considered specialized, neither proportions nor adaptability of equipment need change as one enterprise is increased in scale. Both numbers of hogs and numbers of farrowing houses are variable even within the framework of a given total outlay (ex ante to commitment in any form). Too,

the equipment which is technically most efficient can be adopted for either enterprise irrespective of the particular combination.

There are, of course, many other possible associations between short-run transformation curves and long-run enterprise planning curves in addition to the one outlined here. We have used the case where diseconomies to scale exist for both enterprises (an enterprise planning curve convex to the origin). Constant returns to scale give a linear planning curve (constant marginal rates of substitution between the two enterprises). Economies to scale for both enterprises give a long-run planning curve concave to the origin. In case of a linear or concave planning curve, the firm would built a plant for specializing in one commodity only (if the future ratio of product price is known with certainty and is not expected to vary). The linear long-run, planning curve might also be associated with (a) a linear short-run transformation curve (identical to the long-run curve, for example, where the alternative might be two different varieties of the same crop), or (b) a family of convex short-run transformation curves. The concave planning curve might also serve as an envelope of a family of either (a) linear, (b) convex, or (c) concave short-run transformation curves. The short-run transformation curves may also take on many particular forms given a convex long-run planning curve. The short-run curve will be identical with the long-run curve for two products which require the same machinery, raw materials and skill of labor and can be produced during the same seasons of the year. The slope of the enterprise planning curve will deviate from each of the family and short-run transformation curves to a greater extent as specialized resources are not equally adapted to the various products. In agriculture, the short-run and long-run curves will be almost identical for two crops such as spring-sown oats and barley (except when "short-run" refers to within a production year and a period of the season after both crops have been sown and seasonality prevents plowing up one crop and seeding the other). Divergence is perhaps greatest for livestock where building "requirements" differ widely between enterprises. In order to minimize space the analysis which follows is restricted to a convex long-run or enterprise planning curve and a corresponding family of convex short-run transformation curves.[5]

[5] As the indications above suggests, many other forms of transformation curves are possible. They may be both convex and concave within regions. They may also include areas of "complementarity" along with convex and concave portions.

### *Price Relationships*

One optimum short-run plant exists for each possible price relationship. This point is illustrated in Figure 4. For a price relationship represented by the iso-revenue line $I_1R_1$, short-run plant $m_1n_1$ will allow a maximum total revenue from the given outlay.[6] The firm would also be in equilibrium were it to employ another short-run plant with this same price relationship. For example, tangency of iso-revenue line $I_1'R_1'$ with plant $mn$ represents such a short-run equilibrium for the same price relationship

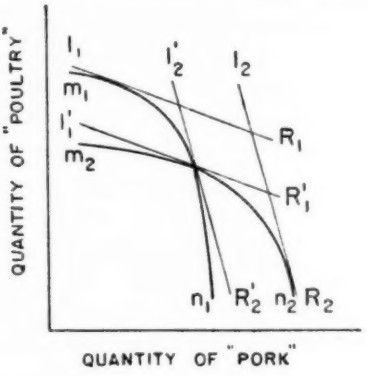


FIG. 4

(the slope of $I_1'R_1'$ is equal to that of $I_1R_1$ thus indicating the same price ratio for the two products). However, under the same price relationship, short-run plant $m_2n_2$ is less efficient than $m_1n_1$ since it does not allow as great a value of product from an equal resource outlay. ($I_1'R_1'$ is lower in the plane $OX$-$OY$ thus representing a smaller total revenue than $I_1R_1$.) Short-run plant $m_2n_2$ is most efficient under the price relationship represented by $I_2R_2$ since it allows a greater total revenue (from an equal outlay) than does

[6] An iso-revenue curve indicates all the possible combinations of the two products which will bring in the same (or equal) revenue. Its slope is thus a function of the ratio of prices for the two commodities. Maximum gross and net revenue is denoted for a firm when the iso-revenue curve is tangent to the iso-cost curve. At the point of tangency, the slopes of the two curves are equal and also the marginal value productivities of resources allocated to either enterprise are equal ($Px \cdot dX = Py \cdot dY$). A lower iso-revenue curve and a different combination of enterprise represents a less-than-maximum income from the given resources. A higher iso-revenue line could not be attained with the given resource outlay. Thus the maximum-revenue allocation of resources between the two enterprises will vary with each change in price relationships.

short-run plant $mn$ even in the case of equilibrium of the latter (tangency with $I_2'R_2'$).[7]

Thus if the firm is certain that a single combination of enterprises will be maintained once funds are committed to the form of specialized equipment, it will build the single "inflexible" short-run plant. However, suppose the expectation exists that price ratios will not be constant over time but will vary between the two extremes suggested by the slopes of $I_1R_1$ and $I_2R_2$ in Figure 4. The firm cannot have two short-run plants given the limited total outlay suggested by either $m_1n_1$ or $m_2n_2$. What short-run plant is then most efficient?

### *Flexibility*

Techniques exist, however, for constructing many different physical short-run plant layouts. The equipment of the plant can be highly specialized (a low marginal rate of substitution between enterprises within the relevant short-run plant) for the particular long-run combination selected. It can also be constructed in a manner which allows greater flexibility in shifting from one product to another once resources have been committed to a single short-run plant. The degree of flexibility is denoted by the elasticity of substitution of one product for the other. In agriculture, for example, the farmer can construct a pen-type rather than a stanchion barn. Thus if he chooses to shift resources to beef cattle he can more readily do so. Or, his pen-type barn is even more flexible in terms of expanding dairy production. Similarly, the construction of poultry houses and brooders can be compromised to allow mobility and space adaptations should the decision be made to increase pork output at the expense of chicken. It is likely true in these cases that the biological and engineering properties of

[7] Our model also suggests why two firms with similar or identical investments might produce different combinations of products even for a given ratio of prices. Once each of two firms have adopted a short-run plant both can maximize profits by producing different proportions of products. If the realized (or expected) ratio of prices indicated by the slope of iso-revenue curves $I_1R_1$ and $I_1R_1$ in Figure 4, firm $m_2n_2$ should produce a "large" amount of pork and a "small" amount of poultry while firm $m_1n_1$ should reverse the proportions. Firm $m_1n_1$ will realize a greater net revenue under this procedure. Yet both firms will be maximizing their revenue given the established short-run plant layout. This is a consideration which is especially important in recommendations to farmers where the existing buildings and equipment on farms were most frequently constructed by a previous operator with entirely different expectations of (1) price relationships, (2) the optimum degree of resource specialization and (3) the most profitable combination of enterprises. Once a firm has long-lived, specialized resources on hand, it must make decisions in light of the production opportunities which are then present.

hog houses adaptable for poultry production are not technically as efficient as poultry houses designed specifically for poultry; the rate at which money resources or physical materials can be transformed into poultry products will be less in the former than in the latter instance.

However, even though the transformation coefficient (of resources into either one of the single enterprises) may be less under a flexible than under an inflexible plant arrangement, the firm may prefer flexibility to the extent that the marginal rates of substitution between enterprises are sufficiently greater. This situation is

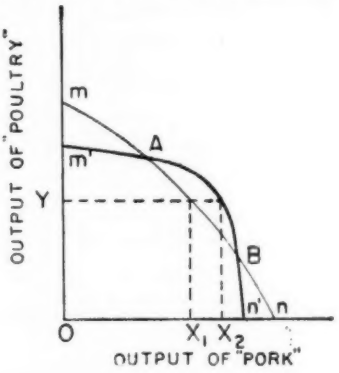


FIG. 5

illustrated in Figure 5 for two short-run plants of the same total resource outlay. (Our comparison of short-run plants refers to an equal outlay of resources or costs in all cases.) The opportunity curve $m'n'$ represents an inflexible plant while $mn$ represents a flexible plant of equal investment and costs. The inflexible plant is more efficient for any output combination falling within the segments $AB$ on either opportunity curve; for a given output of one product, more of the other can be produced. The flexible plant is more efficient for any enterprise combination falling outside of these limits. For example, an output $OY$ of poultry allows an output $OX_2$ of pork under the inflexible plant. An output $OY$ of poultry allows an output of only $OX_1$ under the flexible plant, however.

### *Maximum Revenue Under Instability*

Still the firm may prefer plant $mn$ over $m'n'$ if it expects prices to vary widely from one production period to the next. Two ex-

treme possibilities in slopes of iso-revenue curves as related to price variations are illustrated in the Figures 6 and 7. Figure 6 represents the iso-revenue case in which the correlation coefficient between changes in prices of the two commodities is +1.0; prices change by the same ratio and in the same direction. Figure 7 represents the iso-revenue case in which the correlation coefficient between changes in prices of the two commodities is −1.0; prices change by equal proportions but in opposite direction. Under the

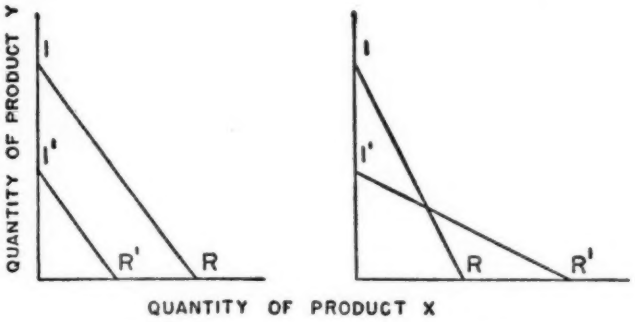


FIG. 6




FIG. 7

expectation of price variations of the first nature ($r=+1.0$), the firm would obviously select the best adapted inflexible plant such as $m'n'$ in Figure 5. A maximum revenue thus could be attained from given resources. If prices fall, the ratio remains the same and the firm will produce commodities in the same proportions except that income will be less than previously. If the expectation is for a sufficiently "low" correlation coefficient (with +1.0 as the maximum and −1.0 as the minimum) between price movements for the two commodities (wide changes in price relationships) the firm will select a flexible plant such (as $mn$ in Figure 5) in order that allocation of resources can be geared to future variations in price.

The limits within which the flexible or inflexible plant is to be preferred can also be illustrated geometrically (Figure 8). However, we first outline the particular circumstances under which both plants are equally efficient. The iso-revenue curve $I_1R_1$ and $I_2R_2$ are tangent to both the flexible and inflexible short-run plants. Identical or equal revenues and outlays are thus represented by equilibrium of the two plants. At the points where $I_1R_1$ (or $I_2R_2$)

is tangent to both $mn$ and $m'n'$ the slopes of the two transformation curves are equal, thus indicating identical marginal rates of product substitution for both plants. Accordingly, the marginal value productivity of resources allocated to either product is equal at these points of tangency both (a) between enterprises on a single opportunity curve and (b) between curves $mn$ and $m'n'$. The firm could be indifferent as to whether to construct plant $mn$ or $m'n'$ from given resources were it certain that the price ratio would

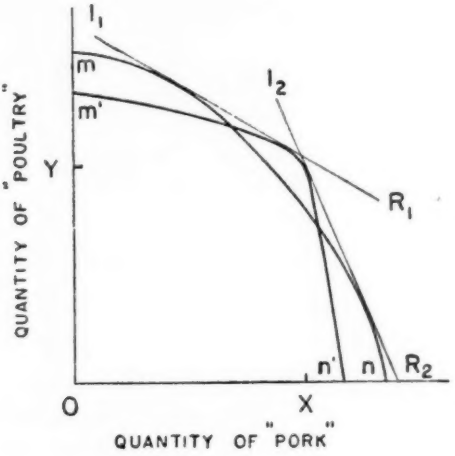


FIG. 8

always vary exactly from that indicated by $I_1R_1$ to that indicated by $I_2R_2$; net revenue would be identical over time for the two plants.

The flexible plant is most efficient (profitable) for variations in price ratios which fall outside the limits indicated by iso-revenue curves $I_1R_1$ and $I_2R_2$. While a revenue line with a slope of less than $I_1R_1$ can be tangent to each of the transformation curves $mn$ and $m'n'$ it cannot be tangent simultaneously to both as a single iso-revenue curve. An iso-revenue curve with a slope of *less than* that of $I_1R_1$ and tangent to $m'n'$ must lie lower in the plane than one of the same slope but tangent to $mn$. Thus a smaller total revenue would be denoted from the inflexible plant. Similarly, a price relationship represented by an iso-revenue curve with a slope *greater than* that of $I_2R_2$ would result in a higher total and net revenue for the flexible than for the inflexible plant; the iso-revenue

curve tangent to $m'n'$ would again lie in a lower plane than one of equal slope but tangent to $mn$.

The same reasoning applies to price variations which might be denoted by iso-revenue curves with slopes falling between those of $I_1R_1$ and $I_2R_2$. While revenue curves with all these possible slopes (*less than* $I_2R_2$ and *greater than* $I_1R_1$) can be tangent to both $mn$ and $m'n'$, those tangent to the inflexible opportunity curve will lie in a higher plane and thus denote a greater total revenue than

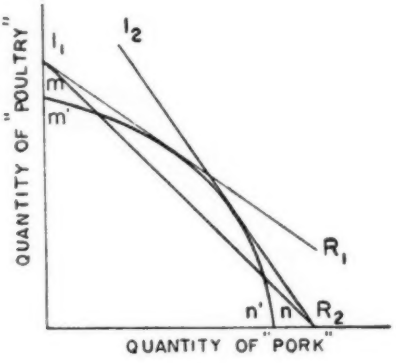


FIG. 9

those for the flexible plant. A firm which expects its output combination to average $OY$ of poultry and $OX$ of pork over a period of years but to vary from the combinations (a) a large poultry and a small pork output to (b) a large pork and a small poultry output, would still employ the flexible plant. The inflexible plant would be employed for combinations which also average $OY$ and $OX$ but vary within the range ($AB$ in Figure 5) for which the inflexible plant is most efficient.

An added technical possibility is that the flexible plant is more efficient than the inflexible plant for every possible combination of products. Here the transformation curve for the inflexible plant will always lie within the area outlined by the flexible transformation curve. Regardless of the exact price ratio or the nature of variations in price ratios, the flexible plant will always bring in the greatest revenue from a given or equal outlay.

### *Accentuated Commodity Cycles*

The extreme case of flexibility can be represented by a linear short-run transformation curve such as that of Figure 9. Where the

constant marginal rates of substitution of plant mn represent maximum flexibility, inflexibility is represented by m′n′. Again an optimal plant can be built by a firm faced with varying price ratios. If price ratios were expected to vary within the ranges represented by the slopes of (dotted) iso-revenue curves $I_1R_1$ and $I_2R_2$, the firm would employ the inflexible plant. If price ratios were expected to vary outside these limits, the firm should adopt the flexible plant ($I_1R_1$ is tangent to m′n′ and intersects the $Y$ axis at the same point as $mn$. $I_2R_2$ intersects the $X$ axis at the same point as $mn$ and is also tangent to m′n′). Given the combination of a perfectly flexible plant and expectations of price ratios varying outside the limits suggested by $I_1R_1$ and $I_2R_2$, the business firm would make wide shifts in use of resources and would produce only "poultry" in one production period and only "pork" in another period.

Commodity cycles would be accentuated indeed were the majority of firms to operate with perfectly flexible plants (constant marginal rates of substitution); cycles would be short but production of pork, for example, would vary between a zero output in one year and an enormous output in another (were all firms to formulate similar price expectations). For example, the higher inter-year variation in output for some agricultural products (potatoes, pork, poultry) as compared to others (dairy and fruit) undoubtedly stems from the degree of short-run flexibility and adaptability of resources employed as well as from the magnitude of price variations and the length of the production period, reasons ordinarily cited.

### *Individual and Social Efficiency*

The logic set forth above emphasizes the degree of economic inefficiency which can stem from market variations. Both the individual firm and society may sacrifice in terms of total product as resources are adapted to meet anticipated price swings. The firm of our model could always select an inflexible plant under price stability which allows the same product combination with a smaller total resource outlay (or, conversely, a greater product combination with an equal outlay) than a flexible plant under price instability. The total product available to society is also less than maximum as long as resources must be invested in flexibility per se. However, it should be emphasized that given an environment of instability and fluctuations in resource allocations outside the limits suggested by

*A* and *B* in Figure 5, flexibility allows an increase in the product to both the individual firm and society.

Empirical inquiry has not been made into the "exact" extent to which enterprise flexibility is practiced in agriculture or other industries. Neither have estimates been made of the degree of resource inefficiency which grows out of short-run market instability and effort of firms to meet it through investment of resources in flexibility. Elimination of instability and the flexibility which it causes represents one avenue of increasing the total social product. However, in the absence of measures to eliminate market instability, the social product might also be increased by extending enterprise flexibility in firms. For example, engineers might be put to work designing buildings and machines which have a greater degree of adaptability. The elasticity of substitution of enterprises would thus be increased. The need here is especially great in agriculture where the engineer's criterion of efficiency in building construction has been one of "years of life." The first alternative, elimination of instability (except that portion which can be imputed directly to economic progress) and the necessity for investing resources in stability, should be given heavy emphasis for reasons that are obvious.

# PROBLEMS OF LANDOWNERSHIP IN LATIN AMERICA

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THE problems of landownership are fundamental to the economics of Latin America. The ramifications of these problems run out into the general economic, political, social, and religious life of the people in such a way as to impede if not frustrate all attempts at the solution of other national problems.

Problems arising from the pattern of landownership and agricultural development existing in Latin America differ in the various republics. Since space prevents a detailed study of each republic's problems, this paper will attempt to deal with them in terms of generalities. There are no simple generalizations of wide application which lead to a quick understanding. No two Latin American countries fit into the same pattern; in fact, some diverge from it rather widely. Yet none of them falls completely outside the general pattern. Not even the most progressive of the Latin American states have solved completely the problems of landownership and agriculture.

In Latin America, probably to a degree equal to that of any other region in the world, the lives of the people depend directly upon the soil. A few statistics will point this up. It should be remembered that these statistics relate only to those gainfully employed in agricultural occupations. Furthermore they do not include segments of the population employed in industries which entail the processing of agricultural products. It can safely be said that the given statistics underestimate the number of people dependent upon the soil. However, for the sake of comparison, for what the figures are worth, they are of value.

Countries for which statistics are available show the following percentages of the population gainfully employed in agriculture: Cuba 41 percent; Dominican Republic 77 percent; El Salvador 75 percent; Guatemala 71 percent; Nicaragua 73 percent; Brazil 69 percent; Chile 36 percent; Colombia 74 percent; Peru 62 percent; and Venezuela 50 percent. In countries furnishing no statistics, such as Paraguay and Ecuador, the estimated percentage of the population engaged in agricultural occupations is about 80–85 per-

cent. By comparison, the United States figure is 13 percent, India and China 66 percent, and Japan 49 percent.[1] Taking Latin America as a whole, a conservative estimate of the percentage of the total population directly dependent upon agriculture for their existence is probably about 70 percent.

Because of the importance of agriculture in the lives of the peoples of Latin America, it is necessary to investigate the manner in which the land is employed. Since the institution of private property is highly respected by the ruling classes in Latin America, development and use of the land depends primarily upon the will of the owners. Therefore, to determine the use of land, it is necessary first to investigate the patterns of ownership.

### *Typical Pattern*

The predominant pattern of landownership in Latin America reveals that the best lands are concentrated in the hands of a few owners. From this it follows that the majority of properties are extremely small and located on marginal or submarginal land. However, only a small part of the rural population is made up of people owning land. Most of the rural population live on the large *haciendas*, *estancias*, or *fazendas*. Their position with regard to tenure is either that of peon, sharecropper, or tenant.[2]

Although the pattern differs in regions, the initial generalization appears correct. In Chile the concentration of landownership is greater than in any other Latin American republic. Of a total of 187,224 agricultural properties listed, 626 averaged 57,160 acreas each. At the other extreme, 87,790 properties averaged four acres each. These figures transformed into percentages show that 0.3 percent of the landowners control 52 percent of the land and 74 percent of the property owners control only 4.7 percent of the land.[3] In Brazil, although the pattern is changing, 10 percent of the population owned 77 percent of the land, while the majority of the landholders held only 3.5 percent of the land.[4] In Argentina the pattern of landholding varies from region to region, yet in Buenos Aires, the prov-

[1] Figures taken from the *Yearbook of Food and Agricultural Statistics* (Washington, 1949), pp. 211–212.

[2] For an excellent description of life under these forms of tenure see G. M. McBride, *Chile: Land and Society* (New York, 1936), pp. 148–170.

[3] See George Soule, David Efron and Norman T. Ness, *Latin America in the Future World* (New York, 1945), p. 352.

[4] Carlton Beals, *America South* (New York, 1937), p. 249.

ince of greatest importance both from the standpoint of the value of commodities produced and population, 320 families owned 39 percent of the total land area.[5] Even in "progressive" Uruguay one-half of the land is owned by 3,270 people.[6] In the Indian countries of the west coast of Latin America, the 5–10 percent of the population which is white owns most of the best land.[7]

The prevalent pattern of concentration in most areas of Latin America is not necessarily the case in all the republics. Haiti has no problem of land concentration. Costa Rica is a land of small farmers as is Honduras. Honduras has perhaps the most progressive land laws of all Latin America. The principle of communal farming on the *ejido* pattern was legislated and complied with long before that of Mexico. In Honduras 75 percent of the population are landowners.[8] In Guatemala, although in the region of Guatemala City the land is owned by a few, small farms predominate. The family size farm occupies 60 percent of the total cropland of this republic.[9] Colombia also has the predominant part of total production produced by small landowners.

No single generalization can be supplied to explain the variations in the pattern of land concentration. However, many writers have attempted to offer a solution. The varied explanations may be briefly stated as follows: (1) where both Indians and mineral wealth existed the concentration of land in the hands of a few began early and was intense—Peru may be cited in this category; (2) lands having neither mineral wealth nor large Indian populations, but good agricultural potential received next attention and were divided into large tracts—Chile, Argentina and Brazil fall in this category; and (3) areas of Latin America which had no mineral wealth, no large Indian populations and little arable land were ignored by the Spaniards, and the small native owner or communal Indian farms continued. The third category explains the situation in many Central American republics and until after the wars of independence that found in Paraguay and to a degree in Uruguay.

### *Why the Pattern Has Persisted*

There is a too common tendency to blame the present concentration of landownership in Latin America upon Spain and its

[5] Soule, Efron and Ness, *op. cit.*, p. 70.
[6] S. G. Hanson, *Utopia in Uruguay* (New York, 1938), p. 213.
[7] Samuel Guy Inman, *Latin America* (New York, 1937), p. 159.
[8] See "Land Laws of Honduras," *Agricultural History* (July 1947), pp. 150–154.
[9] Preston James, *Latin America* (Boston, 1942), p. 680.

methods of colonization. There is undoubtedly some truth in this belief, but the evidence seems to place the blame primarily upon the leaders of the wars of independence and their successors.[10]

During the colonial period, Spain attempted to prevent the growth of large private holdings by the passage of many statutes.[11] Nor were these laws totally ineffective, for not until about 1880 did the pattern of landownership existing today become established. The seventy years between 1810 and 1880 saw the land "grabbed" at a rate far exceeding that of the entire colonial period.[12] It has been said that a major cause for the wars of independence was to allow the creole leaders of Latin America a free hand in the destiny of their counties. Inherent in this belief is the implication that they desired the removal of legislation restricting them in their desire to amass large tracts of land for themselves. In fulfilling this desire, as history has proven, they were extremely successful.

Possible explanations for the persistency of the pattern of land distribution as it exists today may be found within four headings: (1) tradition; (2) political; (3) social; and (4) economic.

There is still a steady resistance to the temptation to turn the increased land value into money through sale. Much of this is explained by the traditional attitude of the landowners toward money. Unlike the people of the United States, they do not invest surplus income. They spend it for better living, travel, a town house or European education for their children. They do not achieve prestige in society through the possession of money income, but through the ownership of land. Hence there is no desire to break up large tracts of land. There is only the desire on the part of the landowners to keep what they have and to obtain more land if possible.

Political reasons play an important role in continuing the pattern of landholding. Except in Mexico the pattern has never been attacked. The landowners have been until recently the major source of political power throughout Latin America. Whenever the "liberal" parties have been successful in obtaining control of governments they have attacked the power of the landlords through political changes rather than through changes in land tenure.[13] The

[10] See Soule, Efron and Ness, *op. cit.*, p. 66.

[11] For a detailed description of Spanish statutes to prevent exploitation of land and native populations see "Land Problem in Mexico," *Foreign Agriculture* (March 1939), pp. 101–103.

[12] For an account of this process as it occurred in Argentina see Carl C. Taylor, *Rural Life in Argentina* (Baton Rouge, 1946), pp. 177–183.

[13] For an example of this practice as it occurred in Uruguay see Laurence Duggan, *The Americas* (New York, 1949), p. 16.

result of this policy has been neither a weakening of the landowners' position, nor a lessening of land concentration, for it has allowed the landlords to continue in their possession of land and to remain a united front ready and able to step in whenever a weakness developed in the position of the "liberal" parties. Furthermore, what progressive measures have been enacted were never adequately enforced by the officials, who all too often aspired to raise their position in society by possessing land and wealth and consequently were easily bought off by the landowners.

The continued existence of the *estancia* and *hacienda* has been aided by economic factors. Because there has until recently existed no domestic outlets for investment funds the landowners have kept their money in land. This, coupled with the tradition of prestige through land, has caused the land values of most areas to be greatly inflated. The result on the one hand has been that the land has been too expensive to buy and on the other hand that those with sufficient funds have been unable to purchase land, for tradition has prevented the owners of land from lowering their status in society by reducing their acreage through sale.

Furthermore there has been a lack of government credit available to small landowners. This factor has in many cases made it necessary for the smaller farmer to sell his property to the large landholder thus furthering concentration.

The dependency of the market economy upon a single crop has made it appear necessary to farm extensively large tracts of land. Since the governments have in many regions depended upon export taxes as a source of revenue, they have not acted to discourage the existing pattern of landholding from which has flowed the major proportion of commodities supplying the export trade.

The fact that the landowners have been the major source of political power has resulted, among other things, in a total absence of or insufficiency of a tax upon the land.[14] The outcome of this has been that many inefficient *latifundia* have been allowed to continue which otherwise would have been subdivided through sale.

The fourth and final category to explain the persistency of large holdings is typed as social. Until recently there has been a lack of feeling on the part of farmers of Latin America to give a movement of land tenure reform its necessary mass momentum. Many of the

[14] On this point see Soule, Efron and Ness, *op. cit.*, p. 63.

small farmers who might be expected to demand land reforms are immigrants. For many, especially in Argentina where tenancy is as high as 66 percent in some provinces,[15] the tenant status is superior to the position on the agricultural ladder held by the tenants' parents. In fact, being a tenant is quite often a step up the ladder. It follows from this that a decided lag has existed between the farmers' intellectual sponsors and the felt need of the farmers.[16]

There exists in those regions where the rural population is predominantly Indian a factor which has decidedly benefited the large landholders. In the Indian countries the desire for private property has never been strong. Communal farming has for centuries been the agricultural pattern employed by the Indians. The Indians have seldom held private property in the form of land, and in the past their desire to do so has not been strong. The Indians, consequently, have seldom been a source from which the advocates of land reform could draw support. The majority of Indians have held the opinion that as long as they can work the land and obtain from it enough to live on, who owns it is no concern to them.[17]

### *Impact on Political Democracy*

Politically the system of landholding has negated democratic processes by giving the small class of landowners excessive power over the masses of the people. One writer has referred to the pattern of society in Chile as one of "Man and Master."[18] This description need not be limited to Chile alone. It is obvious that no lasting popular democracy can develop as long as a small minority of the population has a predominant share of the wealth and power.

The existence of large land holdings has resulted in a highly stratified society. Whereas the landholding group is extremely active, the masses of the people are forced to take a passive role in development of the political institutions of the Latin American republics. From this phenomenon has grown a society without general objectives toward which to strive, a further factor retarding the growth of democratic institutions.

Rural isolation, especially in the pastoral regions, has hindered

[15] See Taylor, *op. cit.*, p. 191.
[16] *Ibid.*, p. 392.
[17] On this point see Inman, *op. cit.*, pp. 37–43.
[18] See McBride, *op. cit.*, p. 12.

the mutual exchange of information and ideas. Therefore, there exists in most republics a minimum degree of political cohesion, which fact has enabled small groups, predominantly landowners, to organize and run the governments as they desire.

The large landowners have been opposed in general to democracy. Their entire social structure, so much for so few and so little for so many, could not exist in a popular democracy. Their opposition to democratic institutions may further be explained by the fact that the "*hacienda* system" depends upon a ready supply of cheap labor. Not only does an illiterate population imply a lack of educational facilities, but also the inability of the masses to alter their position in the social structure. If democracy can be measured by the degree of choice existing for the individual to alter his position in society, then the preventative impact of the pattern of landownership upon democratic choice is obvious.

*Impact on Economic Progress in General and Industrialization*

Economically, the predominant pattern of landownership generally favors backwardness and poverty. The extensive farming of large tracts of land permits the landowners to make sufficient profits from cheap labor, while using the most antiquated agricultural methods. Two primary evils stem from the above method of agriculture: (1) monoculture; and (2) poor utilization of the land.

Monoculture is the concentration on and production of one crop. It must be pointed out that when the pattern of agricultural production in Latin America is described as one of monoculture reference is made only to the market economy. Most farmers practice diversified farming; but these are largely the marginal farmers producing on a self-sufficient basis. However, the large landowners produce the cash crops for export upon which the economy is dependent.

Monoculture is inherited from the colonial days when the colonies exported raw materials needed by the mother country and imported in return finished products.

A few statistics will show the importance of a single cash crop to some Latin American economies. Sixty-one percent of Guatemala's exports is coffee. Eighty-seven percent of El Salvador's exports is coffee, while in Colombia coffee makes up 54 percent of exports. Seventy percent of Cuba's exports is sugar, of the Dominican Re-

public's exports 60 percent is sugar. Seventy-four percent of Panama's exports is bananas.[19] The other Latin American republics, if not dependent on one crop, are dependent on seldom more than two or three.

Monoculture is not necessarily dangerous to a stable economy if the markets for the crop are widespread. However, the Latin American republics are, in large, dependent on a limited number of buyers. The dangers inherent in this situation are obvious; but the large landowners, finding greater profit in the export market and traditionally bound to the production of a single product, have prevented the development of suitable diversification.

The second result of excessive land holdings is poor utilization of the land. Some feel that this is the most important objection to the predominant pattern of landownership. Many holdings are so large that it is impossible for one owner to work them, nor is it felt necessary. Other landowners keep fallow large areas waiting for a rise in price of their commodity before planting. The evil herein is that large tracts of land, where arable land is at a premium, are withheld from production.

A few statistics will show the seriousness of the withholding of land from production. In Chile only 7.5 percent of the total land area is arable, yet only 22.8 percent of this is under cultivation.[20] In Brazil only five percent of the total land area is under cultivation.[21] In Peru only 1.2 percent of the land is farmed.[22] Uruguay cultivates only six percent of its arable land,[23] while even Costa Rica has only 10 percent of its arable land in crops.[24] The above pattern is found repeated to a similar degree in most Latin American republics.

Coupled with the fact that most of the arable land is concentrated in the hands of relatively few people, who produce a single crop for the export market, the situation results in a scarcity of foodstuffs in local areas. If a scarcity does not result, as is the case in Argentina, a lack of variety often occurs.

The poor utilization of land is largely responsible for the high

[19] See Duggan, *op. cit.*, p. 135.
[20] *Agricultural, Pastoral, and Forest Industries in Chile* U. S. Tariff Commission (Washington, 1949), p. 8.
[21] *Agricultural, Pastoral, and Forest Industries in Brazil* U. S. Tariff Commission (Washington, 1949), p. 14.
[22] James, *op. cit.*, p. 184.
[23] *Ibid.*, p. 381.
[24] Soule, Efron and Ness, *op. cit.*, p. 85.

ratio of malnutrition in Latin American countries. Only six of the thirteen republics from which nutritional statistics are obtainable have available on a per capita basis sufficient foodstuffs to meet the minimum daily calorie requirements.[25] This point is made even stronger when it is realized that the situation exists in spite of the fact that over two-thirds of the population is engaged in agricultural occupations.

Many authorities feel that industrialization, agricultural as well as industrial, is the only solution to the dilemma facing the peoples of Latin America. The present pattern of landownership, if it does not actually prevent industrialization, is undoubtedly a serious factor limiting its development.

"*Hacienda* agriculture" depends upon cheap labor rather than intensive scientific farming. Wages of agricultural workers are, therefore, extremely low, seldom exceeding $30.00 a month.[26] It follows that the purchasing power of the great majority of the population is too low to provide any stimulation for industrialization.

The traditional desire for land as a sign of social prestige has resulted in keeping the wealth of the nation invested in land, and, therefore, not available for industrial investment. Moreover, the landowners have been opposed to industrialization, for they have felt that the resultant decline in imports would cause a decline in exports and thus their position would be jeopardized.[27] Consequently, the wealthy landholders, the major source of private investment, have refused to invest in domestic industry, but have invested their capital abroad if not in additional land.

The labor force of the large estates is usually illiterate. The individual is usually skilled in a single supervised task only. The continued existence of large estates thereby greatly limits the population base from which might be drawn a supply of skilled workers and managerial leaders. Many feel that it will be necessary to supplement the native labor by skilled immigrants; yet because insufficient good land is available upon which to settle immigrants little attraction exists for foreign workers.

The lack of a desire on the part of the landowners to increase the

[25] On this point see Duggan, *op. cit.*, pp. 26–31.

[26] This figure is derived from a comparison of wage rates in individual countries furnished by the *Agricultural, Pastoral, and Forest Industries* series published by U. S. Tariff Commission.

[27] For an account of this opposition in Argentina see Norman Mackenzie, *Argentina* (London, 1947), pp. 21–23.

efficiency of farming methods has kept production very low in most areas of Latin America. Withholding of large tracts of land has resulted in an inefficient use of resources. Basic productive capacity in agricultural industries furnishes the traffic for transport agencies, business and commercial houses, and raw materials for urban industries. Agricultural products supply the exports and pay for the imports. They are the basis for credit abroad. All advances in these fields depend on increase of productivity and improvement of land utilization. The present pattern of landownership has proven a check to any advancement in these fields of endeavor.

Poor use of land including the practice of monoculture, has resulted in widespread undernourishment. This has greatly prevented the development of a mentally alert working population. The chewing of coca leaves by the Indians of the west coast of Latin America serves to lessen appetites and artificially increase endurance. So detrimental has this widespread practice proven to the wellbeing of the people that repeated attempts have been made by the governments concerned to stop it. However, without increasing the domestic supply of foodstuffs little success may be expected from attempts to end this habit.

Improper land utilization and inefficient production has caused many Latin American governments to import large quantities of food, particularly in Venezuela where 90 percent of her wheat flour and 50 percent of her rice, the two major foodstuffs, are imported.[28] As a result of government policy, stemming from the powers of the landholders, a large part of the limited federal revenues of many Latin American countries has been used to import foodstuffs, thus using precious capital so badly needed for social improvement and industrialization. Attempts to industrialize depend upon adequate transportation, badly deficient in most countries of Latin America. Terrain is responsible for much of the lack of transport, but the landowners are also to blame. What routes do exist are constructed for the benefit of the large estates. A glance at any map will show that the railroads radiate from the major shipping points so that the produce of the estates may enter the export trade. They are seldom constructed to supply the hinterland with goods to supply potential industrial centers with raw materials, or to enable intra-

[28] *Agricultural, Pastoral, and Forest Industries in Venezuela*, U. S. Tariff Commission (Washington, 1949), p. 5.

state communications. Additional railroad construction has been hindered in the past by landowners' opposition to the dividing up of their large estates by railroad tracks.

One final outcome of specialization for export should be mentioned. By preventing diversified production, it has cut any impetus for the development of agricultural processing industries, the beginning form one would expect industrialization to take.

### *Future Trend*

It appears inevitable that the large estates will in time become divided among the mass of rural populations. The question to be asked is will it happen as the result of a peaceful procedure or as the result of violent social revolutions? Regardless of which alternative will be selected in the long run, certain factors are at present taking place which are causing a gradual subdivision of the land. These factors exist both within the system of land concentration and without.

This phenomenon is observable especially in Brazil. Since 1920, the area in small holdings (150 acres) has increased from 8.9 percent of the land to 18 percent of the cropland. In all, the number of holdings between the census of 1920 and 1940 has increased from 648,153 to 1,895,872.[29] Today in Sao Paulo, the major producing state of Brazil, most of the holdings are family sized farms.

Subdivision has occurred in other republics, but not as rapidly as in Brazil. In the more backward countries, the process has taken place extremely slowly.

The major internal factors causing subdivision may be divided into three groups. The most important factor causing subdivision is inheritance. The inheritance laws of the Latin American republics are patterned on Roman law and prevent the handing down of an estate to a single heir. It must be divided among all the heirs.[30] In Chile where entailed estates existed until the last quarter of the 19th century the effects of subdivision through inheritance have been rather slow in being felt.

Disregard for conservation of soil and particularly the soil depleting effects of coffee planting has resulted in the exhaustion of the soil in many areas. Landowners have often sold the depleted regions and planted elsewhere. This has been particularly true on the east coast of Brazil.

[29] T. Lynn Smith, *Brazil: People and Institutions* (Baton Rouge, 1946), p. 503.
[30] For an account of this process in Brazil see Smith, *Ibid.*, pp. 506–511.

Finally all land owners have not been immune from financial distress. Excessive living has in many cases resulted in large debts. Inability to pay these debts has resulted in sale of land to obtain the necessary funds to make payments. Sale of this land to the governments has often enabled the governments to form colonization programs which in turn caused the land to be subdivided among the population.

The greatest external cause in recent years for subdivision of large estates has been the growth of industrialization. Industrialization has been accompanied by growth of cities and a resulting slow decline of the prestige of the rural areas. With the advent of industry additional investment outlets have developed, and many landowners have sold sections of their estates in order to transfer capital into the infant industries.

Development of industry has been accompanied by higher wages paid to Latin American workers. In many areas, especially in Brazil, where an agricultural labor shortage has existed, large landholders have frequently been forced to sell segments of their estates in order to keep people on the land so that during harvest time they will be available as day workers.[31] This practice has caused the partial subdivision of many estates.

Government colonization schemes have also furthered the subdivision of land.[32] Yet in most areas such schemes have merely increased the number of small holdings by settling the public domain and in no way subdividing the existing large holdings. In Chile, as is the case in most other Latin American republics, part of Central America and Venezuela being exceptions, the public domain is not suitable for farming under present day techniques. It is for this reason that many colonization efforts have resulted in failure. Peru is an example of this. Bearing in mind the lack of suitable public domain, the probable outlook will be that the governments will have to purchase by force certain *latifundia* and redistribute the land to the landless rural population.

Expropriation of land can be legally carried out. However, the governments must face the problem, and most of them appear to be awakening to the need of doing so.[33] Justification for forced purchase of estates in order to subdivide the landholdings may be

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[31] See H. W. Spiegel, *The Brazilian Economy* (Philadelphia, 1949), p. 157.

[32] For a full description of a colonization program as conducted in Argentina see Taylor, *op. cit.*, pp. 357–361.

[33] For recent developments see Soule, Efron and Ness, *op. cit.*, pp. 230–242.

found in all of the 20 Latin American constitutions.[34] All of them contain articles declaring in effect that the rights of property are subject to the limitations or rules that the maintenance and advancement of the social order demand. The constitutions of Cuba and Guatemala go as far as to specifically prohibit *latifundia*.

Latin America so far has been unsuccessful in solving the problems inherent in her patterns of landownership. The over-all picture of the concentration of landownership is still extremely dark. It has meant that economically the dead have imposed their traditions upon the living; that progress is an uphill struggle against history; that minority rule is the accepted principle of government; and that production rests upon an impoverished people with a substandard of living with neither the lure of frontier expansion nor the certainty of democracy to save them.

Some may see developing a gradual solution to the above dilemma. However, to hazard a guess as to the eventual outcome is folly. Yet it can safely be said that unless land tenure reform progresses, a stable popular democracy and the elements necessary for its foundation will probably never develop. Opposition to reform is still strong within the landlord class, but pressure from the landless is mounting. Unless the landlords agree to reform, which seems unlikely, the alternatives are either a neo-fascist state, or a violent social upheaval as occurred in Mexico followed by years of chaos and deprivation for all.

The pattern of landownership is and it seems will continue to remain the major barrier to a successful solution of agricultural problems. Until this foremost problem is solved Latin America will remain a land where the vocal few have profited from the voiceless many. Undoubtedly, progress has been made, but advancement of the material and social wellbeing of the farmers has been painfully slow. Need for improvement is gradually developing in the minds of the masses, yet a great chasm exists between the hope and the deed. Mexico, which has not been discussed in this paper because it is a special case, although one of the least prepared of the Latin American republics has blown off the top of her economic pyramid and undertaken on a broad base the redistribution of her land. Although land is the foundation upon which every activity in Latin America must rest for many years to come, other nations, better equipped than Mexico for a successful solution of the problem, have continually sidestepped the issue, only postponing the inevitable crisis.

[34] See Russell H. Fitzgibbon, *The Constitutions of the Americas*, (Chicago, 1948).

# NOTES

## PRICE PROVISIONS OF THE AGRICULTURAL ACT OF 1949*

THE Agricultural Act of 1949 has come in for its share of criticism as a compromise, a hodge-podge of diverse and inconsistent elements, not much improvement over the Agricultural Adjustment Act of 1938, unnecessarily complicated, and destined for a short life and an inglorious one.

It is easy to join this rather general chorus. There are plenty of things obviously wrong with the Act, especially from the strictly economic point of view. But I should be sorry to see us entirely preoccupied with destructive criticism. I should like to raise a discordant voice and point out a few good features of the Act that are not obvious on the face of it, and to show further how these features might be made better yet.

It is not necessary to take the space here to enumerate the main features of the Act. It is assumed that most readers of the *Journal* are already familiar with them.

### *Flexibility of Loan Rates*

The flexible support percentages of parity—the sliding scales—in which the loan rates vary inversely with supplies, surely make good sense for most crops. They fit the economic facts of life; they tend to stabilize incomes; and they should at least be financially easier to administer than fixed percentages.

It would be better, I believe, if more diversity were introduced into the sliding scales for the different crops. The loan rates for the basic crops vary inversely but less than proportionally with the total supply. In the case of feed crops, less flexible rates would be desirable, in order to help stabilize livestock production. In the case of other crops, greater flexibility would be desirable, to more nearly stabilize income from the sale of the crop.

The scale of rates that would provide stable incomes is not as simple a matter as appears at first sight. One would suppose that in order to stabilize incomes, loan rates should vary inversely and proportionally with the total supply. But two qualifications need to be

* Journal Paper No. J-1754 of the Iowa Agricultural Experiment Station, Project 1013.

taken into account. In order to stabilize incomes, the loan rate-quantity curve should be not a straight line, but a rectangular hyperbola, asymptotic to the $x$ and $y$ axes. On this curve, the rate for a supply that is only 80 percent of normal, for instance, should be 125 percent (not 120 percent) of normal; and the loan rate for a supply that is 120 percent of normal should be 83.3 percent of normal (not 80 percent).

Second, if the sliding scales were set up in terms of size of crops rather than total supplies (crops plus carry-over) incomes would be more nearly stabilized. But that would eliminate a good feature of the use of total supplies—the fact that this automatically lowers the rates when they have been set too high and have caused burdensome supplies to accumulate. With this in mind, it would be better to retain the total supply basis that is used in the Act, but increase the flexibility of the loan rates so that they would vary inversely and *more than* proportionally with the total supply.

### *The New Parity Formula*

The most important features of the new parity formula in the Agricultural Act of 1949 are three in number. (1) The formula includes the cost of hired farm labor in the parity index. (2) It brings the parity prices for different farm products into line with their prices over the average of the past 10 years. (3) It ensures that these parity prices shall average the same *as a group* as they would under the old formula.[1]

The first one of these three features brings the base of the formula more nearly up to date. The most recent 10 years is not all that one could ask for in the way of a base, since it includes so many war years; but it is clearly more nearly representative of current conditions than the old 1909–14 base.

The second feature improves the accuracy of parity prices as reflectors of changes in average prices paid by farmers. The inclusion of the cost of hired labor (the largest single item of cost in the average farm budget) certainly improves the coverage of the parity index as a reflector of prices paid by farmers.

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[1] O. V. Wells provides this necessary qualification: "except that the new formula includes an allowance for hired farm labor which currently adds about 6 percent to the parity price calculations and that the continued use of the old parities for four of the basic commodities and transitional parities for some of the other commodities for the next several years will considerably delay the effective adoption of the modernized parities."

It is the third feature of the new formula—the retention of the old 1909–1914 base for farm products as a group—that is most open to question.

*The New Base*

The new formula starts by computing the simple average price of each farm product over the past 10 years. In the case of wheat, for example, this price over the period 1940–49 was $1.49. Over the same 10 years, the average index of prices received by farmers for farm products as a group, on the January 1910–December 1914 base, was 202. Dividing the $1.49 by 202 gives 73.8 cents as the adjusted base price for wheat. This adjusted base price is then multiplied by the current index of prices paid by farmers (including interest, taxes and wage rates), also on the 1910–14, base to give the new parity price for wheat.

In this case the new parity price would be lower than the old, because the adjusted base price (73.8 cents) is lower than the original 1909–14 base price (88.4 cents).[2]

The reason for this is that the price of wheat was lower in relation to the prices of all farm products as a group during 1940–49 than it was in 1909–14.

*Cut Loose from 1909–14?*

The question is: Would it not be better to cut loose from the old 1909–14 base entirely?

If this were done, the procedure would be to take the average price of wheat over the past 10 years ($1.49) as the new base price. The current parity price for wheat could then be computed at one step, by multiplying $1.49 by the current index of prices paid (not on the old 1909–14 base, but on the new base—the 1940–49 period). This procedure would be similar to the old procedure, except that only the more recent base period would be used throughout. No use would be made of the old 1909–14 base at all.

The chief shortcoming of this procedure would be the unrepresentativeness of the 1940–49 base for farm products as a group. Most of those years were war or immediate post-war boom years, when the prices of farm products were higher than their normal relation to other prices. Even during the war years when OPA price ceilings were in effect, the index of prices of farm products ranged

[2] In actual operation, the old parity price for wheat will be used for several years, in accordance with another provision of the Act.

between 190 and 200, while the index of prices of non-farm products ranged only between 120 and 125. After the war, all prices rose further. The peak of the parity ratio (between prices received and prices paid by farmers) came in October 1946, when the ratio stood at 133.

There is a simple way to compute what the effect of using the 1940–49 base entirely would be. That is to compute the average parity ratio, on the 1909–14 base, for that period of years. The basic data are given in Table I.

TABLE I. AVERAGE PARITY RATIO BY YEARS (1909–14 BASE)

| Year | Parity ratio | Year | Parity ratio |
|---|---|---|---|
| 1930 | 80 | 1940 | 80 |
| 1931 | 64 | 1941 | 94 |
| 1932 | 55 | 1942 | 106 |
| 1933 | 60 | 1943 | 119 |
| 1934 | 70 | 1944 | 116 |
| 1935 | 84 | 1945 | 117 |
| 1936 | 90 | 1946 | 121 |
| 1937 | 92 | 1947 | 120 |
| 1938 | 77 | 1948 | 115 |
| 1939 | 77 | 1949 | 105 |
| Average | 74.9 | Average | 109.3 |

The average parity ratio for 1940–49 was 109.3. This means that shifting entirely to the 1940–49 base would raise parity prices as a group 9.3 percent. It seems to me that we would be unrealistic to try to preserve those levels in the peace time or cold war time that we are in and likely to stay in for some time. The parity ratio for December 1949 was only 98. This ratio is likely to run lower in the future as Marshall Plan aid diminishes. It will be difficult enough to carry through the existing price support commitments. If they were nearly 10 percent higher, the job would be very difficult indeed.

Similarly, if the average of the most recent 10 years had been used as the base in the past, say 10 years ago just after the depression, it would have resulted in parity prices as a group that would have been 25 percent lower than if the 1909–14 base had been retained.

That is to say: The use of the most recent 10 year base for farm products as a group would have the disadvantage of projecting the most recent 10 year average of the relation of farm prices to other prices into the immediate future. It would tend to project boom

prices into depressions, and depression prices into booms. Retaining the 1909–14 base for farm products as a group gives more stability to parity prices as a group. It provides a stable relation between farm and non-farm prices through boom and depression. The most recent 10 year average base would not do this.

The prices received by farmers ordinarily vary about twice as much from boom to depression and back again as the prices paid by farmers. The ratio between variations in the two series is about two to one. It is difficult enough to try to convert this to a one to one ratio, as the retention of the 1909–14 base does, without trying to convert it to a figure that would vary from time to time, but would average less than one to one, as the use of the most recent 10 year average would.

It seems, then, that the new formula uses the best features of the most recent 10 years (the modernization of the relations among the parity prices for different farm products) and avoids the worst feature (the projection of boom levels into depression periods and vice versa). Or looked at from the other point of view, it uses the best feature of the 1909–14 base (its stability) and avoids its worst feature (the freezing of relationships among farm prices in the 1909–14 pattern).

### *Stability at What Level?*

This leaves the question unanswered whether the stability provided by the 1909–14 base for parity prices as a group is stability at the proper level.

It is difficult to establish whether the 1909–14 relationship is too high, too low, or just right, for today and the near future.

Most agricultural economists during the 1940's (their views influenced to some extent by conditions during the 1930's) believed that technological improvements in agricultural production had lowered production costs and increased productivity per farmer (almost doubling it) to such an extent that the level of parity prices as a group was too high, in the sense of being above long-time equilibrium levels. Is this belief correct?

Several fundamental questions immediately arise. Is parity designed to bring agricultural prices to long-time equilibrium levels, or to raise them above those levels? Could agricultural prices be thus raised, if it were desirable to raise them? Would parity prices result in parity income per farmer, which is really the important

thing? And, if so, would parity of purchasing power per farmer with his purchasing power in 1909–14 be an adequate base, when the purchasing power of other groups has increased substantially since then? Can any simple kind of historical base be adequate?

Limitations of space preclude the lengthy discussion that these questions obviously require. The problem is the more complicated by the fact that conditions during the 1940's were so vastly different from those in the 1930's, and nobody knows what they'll be like in the 1950's. But these are the sort of fundamental questions that agricultural economists need to be exploring further. We obviously cannot answer them here.

### *The Flexibility Provisions*

Some sort of pragmatic answer, however, is provided for under the new Act, in the flexible percentages of parity that are spelled out. This flexibility permits the level of support prices to be set, within specified ranges, by the Secretary of Agriculture. It is a short and stumbling step in the direction of the kind of support price level setting that some agricultural economists have been yearning for—setting support price levels for each crop each year in the light of the supply and demand conditions for each crop that year, rather than in the light of any simple historical formula.

We may as well expect that in actual practice at least for the next few years, the flexible support price levels will be set in the light of political considerations as much as or more than economic ones. But economic realities have a habit of winning out over political realities in the long run. The length of the run is apparently proportional to the durability of the commodity. Silver is an example at one extreme; potatoes is an example at the other, in the whacking reduction of potato support prices last year from 90 to 60 percent of parity. Most farm commodities lie near the perishable end of the range. It is interesting to note that the flexibility in the Act is roughly proportional to the perishability of the product.

### *Overall Comment*

Somewhat to my own surprise, therefore, I find myself dissenting a bit from the general chorus of adverse criticism for the Agricultural Act of 1949.

It seems to me that the Act moves about as rapidly in the general

direction that most of us have been urging, as the limited knowledge of economic principles on the part of the general public permits. We should of course continue to point out where the distant goals lie, and more important and difficult, show how they may be reached. But we should not feel too discouraged that our clientele cannot climb all the way at one time toward the goals that lie so clearly in the rarefied mountain air.

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## RECENT EXPERIENCES IN REHABILITATION OF STRIPPED LANDS

STRIP coal mining companies have greatly increased their efforts at rehabilitation of stripped areas during the last 10 years. This increased activity resulted from new legislative requirements in some states and efforts to avoid such legislation in others, the development of new types of mining machinery and mining techniques, and the interest of the owners in returning the stripped areas to some productive use. Some type of vegetation now covers about half of some three hundred thousand acres of lands which have been stripped for coal. The rest of the spoil piles remain barren. This barrenness may result from toxic soil conditions but more often it denotes relatively new spoils on which no plantings or seedings have been made.

About 95 percent of the total area stripped is potentially useful for production of trees or grass. The remaining five percent is either so acid, toxic, or rocky as to make it useless for plant growth. Such useless areas may be small parts of large stripped areas or they may constitute rather sizable areas of sterile wastes. Fortunately, the areas in which efforts at rehabilitation seem doomed to failure are relatively limited.

Most of the strip coal mining companies recognize a social responsibility and are making efforts to rehabilitate their strippings. In most states, the annual rates of seeding and planting since the end of the war have exceeded the acreage of new strippings.

In their efforts at rehabilitation, many types of use have been tried with varying degrees of success. Estimates based on available records indicate the following uses for areas which are now stripped (Table I).

TABLE I.—ESTIMATES OF PRESENT USE OF STRIPPED LANDS, SELECTED STATES, 1949

| States | Estimated total area stripped[a] | Forest uses[d] | | Grass and pasture[e] | Recreation and other[f] | Barren |
|---|---|---|---|---|---|---|
| | | Natural[b] | Planted | | | |
| | (1000 A.) | (1000 A.) | (1000 A.) | (1000 A.) | (1000 A.) | (1000 A.) |
| Arkansas | 3.3 | 0.7 | [c] | 0.9 | 0.1 | 1.6 |
| Illinois | 45.2 | 2.4 | 10.9 | 15.5 | 4.6 | 11.8 |
| Indiana | 48.3 | 7.1 | 20.8 | 3.6 | 3.2 | 13.6 |
| Iowa | 2.6 | .1 | [c] | .7 | .1 | 1.7 |
| Kansas | 29.3 | 3.4 | 2.4 | 9.8 | 1.2 | 12.5 |
| Kentucky | 8.2 | .4 | .5 | .6 | .1 | 6.6 |
| Missouri | 27.8 | 2.6 | .2 | 9.6 | 2.2 | 13.2 |
| Ohio | 39.4 | 1.8 | 2.5 | 8.6 | 1.6 | 24.9 |
| Oklahoma | 8.8 | .6 | .2 | 1.8 | 1.3 | 4.9 |
| Pennsylvania[g] | 58.5 | 2.9 | 4.0 | 23.1 | .6 | 27.9 |
| West Virginia[g] | 40.0 | 2.0 | 3.0 | 14.5 | .5 | 20.0 |
| Other | 9.2 | .8 | .5 | 3.1 | .2 | 4.6 |
| Total | 320.6 | 24.8 | 45.0 | 91.8 | 15.7 | 143.3 |

[a] June 30, 1949, estimates are based on past strippings plus additional acreage estimated on the basis of the rate of coal production.

[b] Areas adequately forested by natural seedings.

[c] Less than 100 acres.

[d] Many of these estimates are for 1947 and 1948. No later data were available.

[e] A major share of this area is used for livestock pasture although some areas in this category remain idle or unused. Probably about two-thirds of this acreage is actually pastured.

[f] Other uses are insignificant in most states. Most such areas are water and idle land with herbaceous cover.

[g] Estimates for areas stripped, where stripping is along the coal outcrop, include a considerable acreage of spoils on land where spoils were deposited but were not underlain by coal.

### *Reforestation*

Reforestation is the most common type of rehabilitation on spoil banks. Natural reforestation is primarily on early strippings and varies considerably in quality. Nearly all natural seedings are predominantly hardwoods with cottonwood a dominant species. Estimates by the United States Forest Service indicate that over 24,000 acres of spoil piles have been "adequately forested by natural seedings."

To date, about 45 thousand acres have been planted by coal companies to forest trees. By far the most extensive plantings have been in Indiana, where rapid reforestation resulted, at least partly, from legislation which requires coal operators to reforest or otherwise rehabilitate stripped areas. A major portion of the Greene-Sullivan

State Forest in Indiana is made up of reforested strip mine spoils donated by a coal company.

Early plantings on spoil piles consisted largely of black locusts, which in early years made rapid growth although later the rate of growth usually slowed down. Borer infestation then heavily damaged many stands. Currently, black locusts are recommended only for mixed plantings where borer infestation is serious. Plantings of jack, red, shortleaf, white, Virginia, and pitch pine have been successful in various locations and soil conditions. Red cedars, oaks, ash, cottonwoods, elms, sycamores, maples, and poplars also do well on some stripped areas.

Current recommendations of tree varieties for reforestation of stripped areas depend upon the percentage of soil on the spoil surface, types of shale, stone, and clay in the spoils, and acidity of the resulting spoils.[1] Several such reforested areas now serve as testing grounds for studies of yields and methods of harvesting of wood products.

### *Pasture Development*

Many small areas, particularly early strippings in Ohio and other states, have become grassed over and are often included as parts of the pastures of adjoining farms. Such pastures are estimated not to exceed 10,000 acres. Their quality is usually below that of nearby unstripped lands, because of the more droughty nature of the soils, the lower organic matter content, and rock and shale on or near the surface. Few such areas have been properly seeded or fertilized to develop good pasture. Most of the naturally grassed pastures are old strippings. They are found where the strippings were relatively shallow, contained little rock, and covered only a few acres.

Seeding of spoil piles for development as pasture or stock range is a more recent development. Most of such seedings have been in mined areas in western Illinois, where the spoils contain a relatively high proportion of loess, glacial till, and other fine material and are usually non-acid. Some of the seeding for pasture in Illinois has been done by airplanes. In some cases, tops of part or all the ridges were "struck-off" before seeding; in others, seedings have been made on raw spoil piles.

Areas developed as stock range in Illinois are usually in large

[1] Technical Paper No. 109, Central States Forest Experiment Station, 1948, indicates recommended species and methods of planting.

blocks, often containing and intermingled with unstripped areas which were not underlain by coal. Controlled experiments on one of the earlier developments of about 600 acres of stock range on partially leveled spoil banks in Fulton County, Illinois, indicate that they provide highly profitable range and that cattle on such range made almost as great and rapid gains as cattle on nearby natural bluegrass pastures. The carrying capacity of such stock range probably increases with age.

Mixed pasture seedings have shown better results on spoil piles than seedings of a single species. Among the legumes, sweet clover, alfalfa, lespedeza, and red and alsike clover have all done well. In some areas, ladino, button clover, and kudzu plantings have also been successful. Among the grasses, orchard grass, redtop, timothy, rye grass, Kentucky and Canadian bluegrass, the fescues, and brome grass have all been successful. Experimental work by the Illinois Agricultural Experiment Station indicates that orchard grass appears to give the best results on spoil piles.

In Pennsylvania and West Virginia, where state laws require some leveling of stripped areas, many of the recently leveled areas have been seeded to forage mixtures. As stripping in these states is usually along the outcrop of the coal seams on the sides or slopes of hills, the results of leveling are flat terraces or benches around the side of the hill rather than the restoration of the original topography. For successful growth, liming and fertilizing are usually necessary and usually result in productive stands suitable for either hay or pasture. Recommended varieties are about the same as for Illinois. Many of the seedings have not, however, proved successful in providing satisfactory stands of forage plants. Lack of fertilizer and care, and improper time for seeding, have all contributed to failure. Where successful stands are obtained, some of these leveled lands prove equally or even more productive than unstripped land on the same farm.

### *Recreational Uses*

Several large stripped areas have been made into hunting preserves and wildlife refuges. Private recreational developments occur along some lakes in final cuts. Illinois is developing a 1,300-acre tract of stripped bottom lands and adjoining uplands in Vermillion County as a park and recreation area. A small acreage of stripped lands has been added to the Illinois State Park at Starved Rock. Linton, Indiana, was given a 600-acre tract of stripped land which

is being developed as a municipal park. Smaller areas in other states are also used as parks. One area in Illinois was developed for a fairgrounds and race track.

In cases in which stripping has resulted in non-stagnant lakes, fishing, boating, and trapping have been successfully developed. Use of stripped areas as upland wildlife refuges appears possible but when such areas are surrounded by farms, local opposition from farmers may be strong as they are known to offer refuge not only to beneficial wildlife but also to predatory species, as foxes and wolves.

Hunting in stripped areas is often a strenuous and not too remunerative sport. The rough ground increases the difficulties of the hunter in walking and in spotting game, and helps the game get away. In many areas, sport hunting of predatory species has failed to keep their numbers under control.

### *Horticulture*

Horticultural uses of stripped areas have received relatively little attention. Currently, about 75 acres in the southern Illinois fruit belt are devoted to experimental plantings. The effect of partial and complete leveling on fruit yields will be considered. Peach and grape plantings, with fertilizer, have offered promise. A few orchard plantings on stripped areas have been made in other states with varying degrees of success. Some relatively recent plantings in Kansas appear promising. Black walnut both in solid stands and as interplantings have been successful. Reports indicate that nuts from trees on stripped areas equaled yields from natural locations in both quantity and quality.

### *Crop Production*

To date, little land has been leveled and few attempts have been made to use leveled areas for crop production. Experimental work now under way indicates that, with the use of fertilizers high in nitrogen, good stands of most legumes and grasses can be obtained. Corn and small grain will give moderate yields when sufficient nitrogen and other needed elements are made available.[2]

High costs have discouraged leveling of spoil banks but new developments in mining machinery and mining methods may mean more such leveling. Some areas, where rock in the surface layer does

[2] Results of experiments with field crops on leveled spoil piles are reported by Alten F. Grandt in the second progress report on Agronomy Project 1003, University of Illinois Agricultural Experiment Station, 1949.

not interfere with plowing and cultivation, may produce crops profitably but as yet only a few acres have been returned to production.

The compacting of the surface in the process of leveling may at least temporarily reduce the productivity potential of leveled areas. In the case of tree plantings, better results have sometimes been obtained on natural spoils than on leveled spoil banks.

*Future Rehabilitation*

The type of rehabilitation which will be carried out on the now barren areas will depend on legislative requirements, use of adjoining unstripped areas, character of the spoil piles, and the cost and success of various types of past efforts at rehabilitation. The possibility of profitably using stripped areas for pasture may receive increased attention, particularly where coal companies own adjoining unstripped land. Areas containing considerable acreage of water, if located near populations that need recreational facilities, will probably be developed for such uses. Reforestation is likely to continue to be the predominant method of rehabilitation of strip coal land in the near future.

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## SCOPE AND METHODS OF AGRICULTURAL ECONOMICS IN SÃO PAULO, BRAZIL[1]

THE differences in field of study and methodology adopted by this branch of science in different countries is well known. Most European countries do not consider the field of marketing which gets considerable attention in the United States; and the farm evaluation and cost of production studies which are very important in England and Europe receive less consideration in the United States.

Before describing the projects in the state of São Paulo which are enumerated later in this paper and with which the field and methodology of agricultural economics is outlined, it is necessary to specify certain conditions under which they were chosen.[2]

The first deals with the aim of agricultural economics studies in

[1] Summary of a paper presented to the "First South American Congress of Research Workers in Agriculture" held in La Estuanzuela—Uruguay.

[2] The reports of the Social Science Research Council on the Scope and Methods in Agricultural Economics and Rural Sociology has facilitated this task.

São Paulo to give immediate help to the agriculture of the region and not in the interest of "pure" science; or in other words, the objective of studying an economic situation, has not been the determination of new relations of cause and effect of a permanent character that may become new laws or principles. The objective has been of a more immediate interest, to describe systematically the essential economic facts of the agricultural problems of the region in order to find their best solution.

If the accepted laws or principles are not sufficient to explain the problem, then a study may be oriented with the aspect of "pure" science, in which new assumptions are formulated and research carried on to verify the validity of any new hypothesis that might be formulated.

Since the aim of the agricultural economic research in São Paulo has been to give immediate help to agriculture, the second step to be considered in the selection of the projects is related to conditions considered satisfactory for the state's agriculture. In order to help or to improve something it is necessary to have some standard which might function as a guide or an objective.

Agricultural economic research may help agriculture in two ways: a) by providing knowledge in farm management, marketing, etc., that might help in organization and operation of farms and in the sale of produce; and b) by providing knowledge as to the causes of the agricultural disturbances and the political characteristics of the region which may be used for a better orientation of the agricultural policy of the Government. It is easily understood that, when knowledge is provided directly to the farmer, the objective is for better efficiency. But, when agricultural policy is concerned, the definition of the objective is far more complicated. What condition of agriculture should be considered satisfactory? How might one determine or define the best conditions for the agriculture of a region as far as land ownership or any subsidy that the farmers ought to have are concerned? And it is necessary to have this objective well settled, at least implicitly, in order to be coherent in formulation of agricultural policy as well as in the choosing of projects to study. What may be considered a problem in one case may not be such in another case.

From an economic point of view the final objective of the agricultural policy should be attainment of the situation which brings the highest return from the human resources of the country over a

long or permanent period. However this statement does not lend much help to a practical policy. It is necessary to have more specific goals, through which the final objectives may be attained. These goals may be agricultural credit, rural electrification, mechanization, land subdivision and the like. However, the determination of these goals and the priorities required for them demand an economic analysis as well as a difficult political investigation. The political aspect of this question should be treated with due importance since the aim of the agricultural economic research is to give elements to the policy. There is no reason, for example, for one to establish land subdivision as a goal for the agricultural policy of a country and to mobilize all the economic resources through taxation, rural credits, etc., for its attainment if the dominant political motives are not in favor of this, although it might even be proved that this subdivision of land is the most important factor for increase of agricultural income.

Because of the difficulties of a scientific determination of these goals, it has not been possible to adopt as yet any specific goals for the agricultural policy in São Paulo. However, judging the political situation on a very personal basis it has been possible to adopt as a goal improvement of the net income of farm enterprises without any decrease of the national income, no wasting of natural resources, nor any changing of the social or political order. This is the objective that has, to a certain extent, guided the choice of projects. It explains for instance the reason for not having adopted special projects for agrarian reform or for improvement of the labor situation.

The projects that follow are classified in three divisions: farm management, marketing, and prices and agricultural policy. These are the main subfields of agricultural economics. Though many projects were not well classified in any of these divisions, it was considered wise not to increase their number due to difficulties of administration.

### *Division of Farm Management*

*A—Projects for the experimental stations*

1—Determination of the most economical degree of intensification of certain farm practices.

With the results of plot experiments of fertilization, spraying, feeding, etc, conducted at the experiment station and with the ap-

plication of methods of the correlation analysis, it is possible to figure out the curve of diminishing productivity that results from the increase of additional quantities of fertilizer, feed, etc.

With this curve it is easy to set the point where the intensification of these practices should stop, according to different prices.

2—Comparison, under controlled experiments, of certain farm practices performed by different methods.

This type of study should be executed at the experiment stations where all factors except the one under study might be held under control. Under this condition it is easier to compare different practices and to determine the factors responsible for any difference. Practices that might be studied are picking corn or cotton by hand versus machinery; use of mechanical versus animal traction on farms, etc.

Studies at the experiment stations are important in São Paulo since the development of its agriculture is still in that economic stage in which improvement in the technique of production brings a certain increase in the financial return of the farm. Furthermore, technical research work in São Paulo is well developed with many data available for analysis.

*B—Projects conducted on private farms*

1—Determination of factors responsible for the success of the farm operation.

This study can be undertaken by two different methods.

a)—Survey method. To apply this method farmers are visited and inquiry made about their investments and farm operations. From the data gathered it is possible to figure out net income of each farm. Hence the problem is to correlate net farm income with certain factors that characterize farm organization: size, proportion in which the different enterprises are combined, etc.

This project is very important since it provides information by means of which county agents may help the farmer in choice of his enterprise; this is very important in São Paulo since on almost any farm there are possibilities of raising some six or eight different cash crops due to the peculiarity of the climate of the region. It also helps the county agent to demonstrate to the farmer the advantage of using machines and new techniques of cultivation.

b)—Farm account book method.

Another way to determine the factors that characterize successful

farm operation is through analysis of farm account books. By providing special books to the farmers in which they write down the daily operations, it is possible to accomplish two types of analysis: correlation of net income of different farms with the factors responsible for its operation to determine which are the most important; and comparison of different farm budgets organized for the different types of organization considered satisfactory for a farm of the region. Calculation of the net income of each budget enables making a recommendation as to the best organization. In order to test either the result of new practices or the good that might be derived from a different combination of enterprises, it is only necessary to make substitutions in operation and observe the change in net income.

This method is recommended to better utilize results obtained from research carried on at the experiment stations. The application of this method in São Paulo has a handicap due to the difficulties of finding farmers willing to cooperate.

2—Determination of the type of farming area.

When a good agriculture census is lacking determination of the type of farming areas of a region can be done with the help of survey data. The farms visited must comprise a representative sample of the population, however. This determination is of basic importance to the development of studies of agricultural economics.

When the agricultural enterprises of an area do not show its full potentiality, which is very common to certain new regions of São Paulo, it is necessary to supplement survey data with further information on the soil and climate of the region in order to have a precise picture of its economic possibilities.

3—Studies of decadent areas.

This is a special case of a land utilization study. It includes research in farm management and marketing and has been classified in this division because the causes of decline of the agricultural areas in São Paulo are related mainly to the problem of farm reorganization; the old agricultural region of São Paulo needs some new crops to replace coffee enterprises that have become non-productive because of aging of the coffee trees and soil depletion. Here the problems of farm management are not studied from the individual farmer point of view. It is considered the problem of the region as a whole and consequently it is necessary to determine the facilities that should be given to the economy of a crop, to the region in general and to each farmer in order to help him to reorganize his

farm. These facilities might be long run credits, agricultural subsidies, marketing facilities, improved roads, addition of electricity, etc. This study requires, first a complete survey of the region to gain information of its agriculture, soil, climate, population, marketing facilities, etc. Second, a study of the crops that might be suited to it is required in order to determine what facilities are necessary to enable their production. With this information it should be possible to draw up an objective program for a favorable economic adjustment of the region.

*Division of Marketing and Prices*

1—Studies of the marketing of agricultural products.

Study of functions performed in getting goods from producers to consumers in the domestic and foreign markets is very important, because it gives information that helps farmers in selling their products, improving their efficiency and eliminating fraudulent marketing practices. The marketing of agricultural products in São Paulo is very inefficient and the prices paid for them at times might be attributed to unfair practices. Hence, the results of any study adopted in this field would be very beneficial to both farmers and consumers.

It should consist of a description of the marketing system and a comparative analysis of operations and expenses of the specific services performed by different methods.

The necessary information might be obtained by interviews with producers, middlemen and consumers.

2—Studies of cooperative marketing.

This study follows the purpose and method mentioned above. However, it should be supplemented by a study of the organization and operation of cooperative selling organizations because the deficiences in marketing practices are very often tied to the shortages of the cooperative operation itself. Information can be obtained from the statistical records of the organizations.

3—Determination of the demand curve of agricultural products in the consumer markets.

The objective of this study is to determine statistically the demand curve and its elasticity in order to determine the size of crop that brings the highest total revenue. Its importance is greater for those products the commerce of which is under control, like coffee and sugar.

The information required is the regular statistical data of consumption, price indices, business conditions, etc. Since the statistical data in São Paulo are not very reliable, it is wise to use for such minor products as beans and rice a new method of investigation which involves the study of family expense note books.

4—Study of factors that affect the demand curves of agricultural products.

The purpose here is to study factors that affect demand, like quality of product, grading and packing, time of selling, etc., in order to help farmers improve the position of the demand curve of their products, and hence to compete advantageously with other products. This study is important for fruits and truck crops, markets for which are unstable.

The necessary information can be obtained by an inquiry with the help of official statistics. Where the information is reliable, it is possible to conduct a statistical analysis that shows the quantitative influence of each factor on the elasticity of demand.

5—Study of the factors affecting prices of agricultural products.

Knowledge of the factors that affect prices is the first step to the institution of a service of price forecasting that may bring many benefits to farmers; it is also an important help in differentiation between price fluctuation due to interference in the market from that due to normal action of supply and demand forces.

Multiple correlation is used to take into account influence of the different variables. Statistical data on production prices, stocks, index of business conditions, as well as data of competing products are obtained from the official statistics.

*Division of Agricultural Policy*

1—Study of comparative advantage of the different enterprises.

This study requires previous investigations on the part of the Farm Management and Marketing Divisions to provide information on the following points: determination of the principal enterprise for the region; amount of land, labor, animals, machines etc., required for each enterprise for each month of the year; changes in cost of production that occur with substantial increase in production; and change in prices that may occur with an increase in the supply. In addition, a survey of the unused agricultural economic resources of the region is required.

Knowing these elements, the probable increase in net income

that might result from an increase in production of any of these enterprises may be calculated. It is also possible to calculate the comparative advantage of the different enterprises. These factors are essential in determining the agricultural policy of the region.

2—Study of the supply of credit, fertilizer, machines, etc., for agriculture.

The objective of this study is to obtain information on the measures that should be taken by the Government in order to provide a better supply of any needed element of farm production at a reasonable price.

The study of each element must follow different approaches. Agricultural credit for instance necessitates a survey of the producers in order to find out: 1) amount and type of credit demanded by producers; 2) sources and conditions under which they obtain it (specifying this information for the different types offered).

3—Study of effects of the monetary and fiscal policy on agriculture.

This study is especially important for countries where protection is needed for industrial development. It requires first of all a definition of the importance of the agriculture as an economic activity.

The study can be conducted on a deductive basis if it deals with provisions, but in studying the effects of measures already in action, deductive analysis must be supplemented with analysis of the evidence.

4—To analyze the services performed by the Government for agriculture.

The purpose of this study is to analyze the results from the laws and regulations that deal with agriculture and to evaluate these results on the basis of the objectives.

This sort of check on the public service is of advantage to agriculture because it brings more efficiency to services and also promotes attainment of the objectives of the policy.

5—Study of the farmers' political organization.

The objective is to evaluate the organizations and to suggest changes that may give farm political organizations larger membership and a more important role in the political defense of the agriculture.

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## COOPERATIVE AND CONTRACT USE OF FARM MACHINERY IN NORWAY*

Since the end of the war there has been an urgent need to increase the degree of mechanization in Norwegian agriculture to increase crop production, and to fit agriculture into the long term program of the Labor Government. Individually and cooperatively owned machine stations, together with the Government's wage policy, have been the major means used to meet the critical situation in Norwegian agriculture.

There are several reasons for the present acute shortage of farm labor: (1) Between 35,000 and 40,000 farm workers, or about nine percent of the farm labor force, have gone into industry since 1945. The recent flight from agriculture has been about twice as rapid as in previous years. (2) In 1948 the length of the working day for hired agricultural labor was shortened to eight hours by legislation, although the contract between the Land and Forest Workers' Union and the Agricultural Employers' Association had contained this provision for some time. This reduction in the work day amounted to an additional loss of labor for only a portion of the farm laborers, not all of whom were covered by the contract. (3) The passage of the three week vacation law in 1947 was particularly harmful to agriculture, not only because of the time lost, but because the Norwegians insist on taking their vacations during the summer months.

During the same period in which there has been a significant reduction in the agricultural labor supply, and a shortening of work time, the population has increased by 258,000 or 8.8 percent above 1938. A factor more important than the absolute increase in population is that the proportion of the population able to work is increasing at a slower rate. In the 1930's, the age group able to work increased by nearly 30,000 annually. Now the increase is about 4,000 per year, and in the future, it is likely to be less.[1] The necessary future expansion of agriculture cannot be based on reserves of man power for there is full employment. Neither can it rest on new supplies of labor, but rather must depend on a thorough rationalization of the industry.

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* Data for the study were collected in Norway by the author in the course of a study of Norwegian Agricultural Cooperatives as Olaf Halvorson Fellow of The American-Scandinavian Foundation.

[1] Memorandum on *A Norwegian Long Term Program*, pp. 14–15.

The machine stations may possibly enable the government to reconcile a land policy of relatively small owner-operated farms with a need for greater per-acre and per-man productivity.

The arable land of Norway is divided into many small farms, with an average area of about 10½ acres. Only about two percent of the farms are of a size that can support the modern machinery needed to give a high productivity per man-hour of input. It is only on a collective basis that the remaining 98 percent can use machinery economically. Even so, it is probable that many of the farms cannot use modern machinery because of the terrain, poor roads, and isolation in the mountains and islands, aside from the economic factors involved.

The Labor Government realized the necessity for investment in this sector of the economy in order to (1) make up the 4.5 percent loss in real capital in agricultural machinery,[2] (2) increase production to keep pace with the growing population, (3) rationalize the industry so that in the future it would take a smaller percentage of the total labor force. Table I shows the gross investment program for agricultural machinery and equipment in the national budgets for 1947–49 inclusive.

TABLE I. GROSS INVESTMENT IN AGRICULTURAL MACHINERY AND EQUIPMENT, 1947–1949[a]

| Year | Million Kroner | Million Dollars |
|---|---|---|
| 1947 | 47 | 9.46 |
| 1948 | 50 | 10.06 |
| 1949 | 57 | 11.47 |

[a] National Budget, 1949, p. 51. The dollar figure is based on the pre-devaluation rate of 4.97 kroner per dollar because the import of machinery and equipment was computed on that basis.

The estimated average annual gross investment for agriculture as a whole for 1949–52 is sixty million dollars.[3] The gross investment in agricultural machinery and equipment in the next few years will equal or exceed the past three years, if programmed imports of the Norwegian government are an accurate indication. Imported tractors and agricultural machinery are to be increased in 1949–50 by 20 percent over 1948–49.[4]

[2] *Ibid.*, p. 10.

[3] *Norway Country Study*, European Recovery Program, Economic Cooperation Administration, Washington, D. C., February 1949, p. 37.

[4] *Ibid.*, p. 64. What effect the devaluation will have on the total import program and its component parts is not ascertainable at this time. It seems likely that there will be a reduction in American equipment and an increase in European types.

The Norwegian government was not without experience in the financial and organizational problems of giving loans and subsidies to farmers to purchase equipment on a collective basis. From 1918 to 1928, the State gave subsidies to farmers who owned the equipment on a cooperative basis, and from 1917 to 1928, the State made loans for the purchase of farm machinery. In 1946, the legislature amended the law of 1936 under which the Production Credit Office for Agriculture (*Driftskredittkassen For Jordbruket*) was operating to permit this agency to lend directly or indirectly to two types of machine stations and to give subsidies for the purchase of agricultural equipment. Most of the machines, particularly tractors, had to be imported. Moreover, at the time the program was instituted the world's supply of machines was limited. It was therefore essential that the machine stations be organized properly so as to use the equipment to the optimum degree. By so doing, fixed expenses per working hour would fall and the machines would more likely be handled by skilled workers.

The machine stations can organize either as a cooperative machine purchasing society, in which the machines are owned by the farmer members, or in the form of a machine holder, in which the machines are owned by a single individual who has contracts with a number of farmers to do their work at fixed rates.

The Production Credit Office loans are so devised that each member of a cooperative purchasing society is granted a loan corresponding to the portion of the purchase expenses assigned to him within the cooperative. The cooperative machine station may borrow up to 70 percent of the purchase price of the machines. It may also receive a subsidy up to 30 percent of the purchase price, but not over 2,000 kroner per full 200 dekar owned by the members. Under certain circumstances, therefore, the cooperative society may obtain 100 percent of the purchase price, part by loan and part by subsidy. The stations shall operate under the technical guidance and supervision of the Production Credit Office. In order to obtain the 30 percent subsidy, the area or territory of operation for both the cooperative station and the sole owner type must be approved by the local (county) farmers' council. All the farmers in a particular area have the right to membership in the cooperative station or have the right to hire the services of the station owned by a sole owner.

An individual wishing to be the sole owner of a station may

borrow from either a Cooperative Credit Association or directly from the Production Credit Office. A loan from a Cooperative Credit Association must have the approval of both the Association's Board of Directors and the Production Credit Office. A direct loan from the Production Credit Office requires approval of the Director as well as the local farmers' council and the Provincial Agricultural Society.

The sole owner of a machine station may borrow up to 10,000 kroner; with the approval of the state Agricultural Department he may obtain a larger loan. A loan from a Cooperative Credit Association may be up to 75 percent of the purchase price, but not over 200 kroner per membership share. A loan directly from the Production Credit Office may be up to 70 percent of the purchase price. When a loan is made directly from the Production Credit Office to the individual, he must contribute at least 5 percent of his own capital to the purchase of the machine. In the regulations for loans to machine stations of the sole owner type, the Agricultural Department has stipulated that special note should be taken of the individual's personal qualities: whether he possesses the skill and the will to develop his machinery station. He must have professional education as a farmer and have had some practice as a mechanic. Separate contracts concerning the work are made between the sole owner of the machine and the farmers. For the security of the station and the stability of the arrangement, the farmers who intend to hire the services of the station, as a rule, should guarantee at least half of the sole owner's liabilities to the Production Credit Office.

The amount of the subsidy depends upon the area of arable land the station will work. In the case of the subsidy to a cooperative machine station, the cultivable land of the members of the cooperative is the deciding factor. In the case of the sole owner, either the area of cultivable land of the farmer who guarantees for, and signs contracts with, the individual owner, or the decision of the farmers' council is used when the individual does not have any guarantors for the loan.

The State subsidy is given to the machine station at the time the machine is purchased, but the subsidy (and the loan, if any) must be paid back to the Production Credit Office in semi-annual installments within ten years. After ten years of operation, the station, with the approval of the Production Credit Office, can use

funds equal to the amount of the subsidy, for the purchase of new equipment or to do with as they wish. A machine station that has received a State subsidy must not, in the course of the first ten years, stop operation and the station may not sell any of the machinery or equipment without the approval of the Production Credit Office. If a station operates contrary to these regulations, the Production Credit Office may refuse to pay back to the station all or a portion of the subsidy funds that the station has been paying into the Office in semi-annual installments. The same applies if Production Credit Office finds that the station has not been operated according to the agreement which was made to obtain a loan or subsidy.

The device of requiring that the amount of the subsidy be paid into the Production Credit Office over a ten year period, to be given back to the station if properly operated, is necessary during the life of the machine for purposes of control over the operation of both types of stations. In the case of the sole owner type, many of the applicants have paid cash for their share of the purchase price and obtained a 30 percent subsidy. If the Production Credit Office did not have control through the above mentioned device, the sole owner might do as he wished and, in effect, immediately obtain a machine at a 30 percent reduction in price.

In many districts, the fundamental organizational work has already been carried out, the farmers' council having marked off the zones of operation for the separate stations. Five of the provinces in which agriculture is important have established a main central station for the whole district, at which costly and little used machines are kept.

The number of machine stations has grown rapidly since 1946 for a number of reasons: (1) the loan and subsidy program, (2) better financial position of farmers, and (3) loss of hired farm labor

TABLE II.—GROWTH OF MACHINE STATIONS, 1946–1949

| Year Ending | Total Number of Stations | Annual Increase | Type of Station | | | |
|---|---|---|---|---|---|---|
| | | | Cooperative | | Sole Owner | |
| | | | Number | Percent of total | Number | Percent of total |
| July 1947 | 55 | | | | | |
| July 1948 | 592 | 537 | 139 | 23.6 | 453 | 76.4 |
| July 1949 | 1,208 | 616 | 343 | 28.4 | 865 | 71.6 |

to industry. Table II shows the growth of the two types of machine stations.

Table II shows the rapid growth of the program, starting in the second year and continuing through the third year. The rate of growth in the future is limited by the position of agriculture in the investment program of the national budget, and by Norway's foreign trade balance. Although it is likely that agriculture's position in the investment budget will not change appreciably until completion of the long term program in 1952–53, it seems probable that the rate of growth will not continue at the high level established in the past two years. As of December 15, 1949 there were 1,400 stations. Officials at the Production Credit Office calculated that the total number within the next few years would reach 2,000. They look for an increase in the number from northern Norway and from the west coast area north from Stavanger. A likely development will be a readjustment, with weaker and ill-conceived stations consolidating with the stronger ones. An internal expansion may also occur with the stations making available more of the different kinds of equipment as the membership increases.

For the two year period from July 1, 1946 to July 1, 1948 the Production Credit Office made loans for a total of 2,000,000 kroner ($400,000 at the pre-devaluation rate). During the fiscal year 1948–49, loans totaled 4,000,000 kroner ($800,000) and subsidies 3,000,000 kroner ($600,000).

It is difficult to determine which of the two types of station is the better. In discussing this problem with a number of people connected with agriculture, the consensus was that the sole owner type was the better for the sole owner usually invested at least 5 percent of his own capital in the enterprise. In the cooperative type, the farmers did not make any initial capital investment, borrowing part of the funds and being subsidized for the remainder. It was also thought that the handling and repair of the machines would be better under the sole owner type of station. The sole owner also usually has a repair shop in conjunction with the machine station, so he can be fully employed during the slack season in agriculture. Numerically, the sole owner type increased more from 1948 to 1949 than the cooperative type, but the cooperative type gained more percentage-wise.

How are the machine stations working? Are they accomplishing the goals set up? What problems have arisen? These are difficult

questions to answer at present because insufficient time has transpired to note any significant changes in the methods used, and because no systematic study has been made of a sufficient number of the stations to draw any reliable conclusions. However, one study of three selected stations was made in 1949 by a student at the Agricultural College of Norway, at Aas.[5] The number studied is far too few for any definite conclusions. The results do give an indication as to how the machine stations are operating, since these stations had been in operation from the beginning of the program.

The type of machines and equipment included part or all of the following: rubber tired tractor, plow, cultivator, three types of harrows, thrashing machine, binder, hay mower, potato planter and digger, cross-cut and timber saws. The largest number of machines are the kinds needed for Spring work. The stations are not used as much for reaping as for threshing of grains because the women and the children of the family can be used to cut and bind the grain.

In the three stations studied the machines had the effect of reducing the amount of hired help for 35 percent of the farmers, and 17 percent were able to do more difficult work. However, the working day was not shortened for any of them. There was no change in the proportions of the various crops nor any change from animal production to plant production. It is likely that insufficient time has elapsed to bring about any shift in the type of farming.

Fifty-six percent stated that they had had good experience with the stations, while thirty-five percent answered that it was difficult to get the necessary machines when needed. It was profitable to use the station for sixty-five percent, while twenty-six percent said it was too expensive.

It was found that the small farmers with less than 20 dekar[6] (about five acres) of arable land were not too interested in using the station. Fifty percent of the farmers served by these three stations used the machinery 10 hours or less that year. The Production Credit Office (*Driftskredittkassen*) estimates that each farmer should use the station between 30 and 40 hours per year to show profitable results for the station. Only the larger farms are able to use the station profitaby for this number of hours.

The machine station can work an area equal in size to a farm with

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[5] *Tre Maskinstasjoners Arbeidsinnsats of Okonomiske Resultat i 1948: Et bidrag til belysning av askinstasjoners virksonhet av Finn Reisegg, Norges Landbrukshogskoel.*

[6] A dekar (or decare) is 0.1 hectare or 0.2471 acre.

800 to 1,000 dekar (200 to 250 acres) of arable land. In addition, there will be an equal or greater area of forest land with the farms, on which some of the machinery can be used. The important factor is the size of the individual farms that make up the total area, and the shape of the fields. The minimum area of 800 to 1,000 dekar should be composed of not more than 20 to 25 separate farms. The importance of the length of the field is shown in a study by the Production Credit Office in which the cost of plowing a field 200 meters long was about one half the cost per dekar when compared to a field 45 meters in length. For plowing and cultivating, the cost declined from 11.70 kroner per dekar for fields 45 meters in length to 6.30 kroner per dekar for fields 200 meters long.[7]

Transportation time to move the machinery from the station to the farm and return, or from farm to farm, was 10 percent of the total effective work and transportation time. The Price Director in each Province sets the price for machinery transport to and from the farm on a kilometer basis, with a certain minimum charge. The Price Director also sets the price that the machine station, either cooperative or sole owner, can charge for the use of the various kinds of equipment. The charge is based on the cost of the machine, current expenses, and labor costs. The Production Credit Office calculates that a tractor, the item of greatest expense, should be used 700 to 800 hours per year in order to get costs low enough so the farmer will avail himself of the machine.

At pre-devaluation prices a station needed to invest between 15,000 and 20,000 kroner to obtain the necessary equipment, depending upon the needs of the locality. The amount required at the present rate of exchange is somewhat higher, since 34 percent of the programmed imports of agricultural machinery is to be from the United States. It should be noted that equipment for forestry is part of the station's complement in some parts of Norway. In many parts of the country there is a close tie between agriculture and forestry because the farmers own forest land as well as arable land and mountain pasture land. The farmers have rights of property or use to about 75 percent of the total forest area. The need to mechanize forestry is perhaps as great as that in agriculture, for the increased output from the forests will permit

[7] *Neon resultater fra tidsobservasjoner for ploying og harving av Oleif Bones, Norsk Landbruk*, 1949, Number 8, pp. 144–146. See also *Norsk Landbruk*, 1948, Number 2, p. 29.

increased exports of forest products and help to bring a balance in Norway's foreign trade. At the present time, Norway is cutting less than the annual timber growth.

In the three stations studied, farmers with one or two horses, as well as farmers without horses, did not increase their use of the machine stations over the previous year. It seems likely that farms with one or two horses will retain them in preference to using tractors because the horse is used for purposes other than plowing, etc. The farmer needs the horse to get to market, drive to church, for lighter farm chores, and for pleasure. The larger farms with more than two horses might reduce the number of horses to one or two, releasing the pasture acreage for an increase in feed for other farm animals, grain, or root crops. The number of horses has increased from 180,000 in 1939 to 200,000 at the present, an increase of 11 percent. It must be kept in mind, however, that Norway is an exporter of horses, and that the fear of being cut off from petroleum supplies in wartime influences the number of horses kept.

There is no doubt that the machine stations will aid in increasing the productivity of a portion of Norwegian agriculture, but it is probable that modern farming methods will not be economical for other sections. The small size of many of the farms, as well as physical isolation in the mountain districts and on the islands, does not make it profitable for the owner to use machinery. Family labor and a horse or two supply sufficient energy at lower money cost. There is a conflict between the long established land policy of small owner-operated farms and the economic necessity to mechanize the agricultural industry to increase its productivity. A committee of the *Storting* (Parliament), which studied this problem in 1946, recognized the necessity to increase the average size of farms so modern equipment can be used effectively.[8] To increase the average size of farms is a long run problem. In many areas of the country, the machine station is not effective until the average farm size is increased appreciably. The government is engaged in a land clearing project on the west coast of the country in which the farms are to be at least 200 dekar, which is about five times greater than the present average. Some thought is also being given to cooperative farms.

More and better roads are needed in some parts of the country so

[8] *Jordbrukets Produksjons og Rasjonaliseringskomite av 1946, Instilling V.*

trucks can be used and the equipment moved rapidly from station to farm and returned.

There can be no question that the machine station is a permanent feature of Norwegian agriculture. However, in order to consolidate the gains that have been made and to fit agriculture into the long term program of the Norwegian economy, some structural changes need to be made.

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## THE COLLECTIVE FARM PEASANT MARKET

AN ISLAND of free enterprise within the nationally planned economy, the collective farm peasant market has grown with official encouragement to account for roughly one-fifth of the ruble volume of retail sales of the USSR in the immediate prewar period.[1] There is every indication that this unplanned and unorganized basically traditional type of direct producer to consumer peasant trade will continue to play an important role in Soviet domestic trade, for some time to come.

It sometimes is contended that the peasant market survives today only in spite of Soviet power, that centuries of custom and practice have defied uprooting. After years of official Soviet opposition and reluctant tolerance by the government, it is noted that not until 1932 did this free small-scale marketing eventually gain official recognition.[2] Since then, the vitality of this age-old institution has been turned toward "building socialism," and thus has emerged the thoroughly respectable collective farm market.

Though Soviet publicity centers its attention upon the ideal and the way these markets are supposed to operate, with adequate facilities for selling, with running water, electricity, refrigeration and proper sanitary conditions, yet the typical, more prevalent

[1] Gosudarstvennyi nauchnyi institut "Sovetskaia entsiklopediia" OGIZ SSSR *Bol'shaia Sovetskaia Entsiklopediia* (Moscow, 1948), p. 1024. The data given here is for the year 1940. See M. M. Lifits, *Sovetskaia Torgovlia* (Moscow, 1948), p. 33 for data of earlier years. The collective farm free market prices often tend to be considerably inflated particularly when there is little competition from State trade and cooperative trade; with the result that the volume of trade *in kind* is in all probability considerably less than one-fifth of all retail.

[2] Orders of Council of Peoples Commissars USSR and of the Central Committee All-Union Communist Party (Bolsheviks), May 6 and 10, 1932, ref. *Sobranie zakonennii i postanovlenii SSSR 1932* (Moscow, 1932), items 190 and 233.

marketplace found in the Soviet Union today appears to have changed only slightly over the centuries.

The collective farm peasant markets are welcomed in the Soviet community today because of their significant contribution to the total supply of consumer goods, particularly food commodities. These free markets draw out a substantial total quantity of needed consumer goods, attracting small individual sales direct from producer to consumer, representing much widely dispersed produce which would never be collected and made available for sales if it had to go through the usual planned and controlled trade channels.

In addition to handling a large proportion of the nation's retail of potatoes, cabbage, milk, eggs, bread, meat and other produce, these markets also sell handicraft manufactures and even second-hand household belongings. Collective farms, farmers and private peasants, artisans and other individuals sell. Private individuals purchase. In all cases sales are spontaneous and are not part of any national plan. Prices are determined by supply and demand. While such retail supplies are not planned, their presence serves to lessen the burden of the nation's planners who must think in terms of the nation's total supply of consumer goods, both planned and unplanned.

Characteristically, the collective farm peasant market is a rural institution in which the exchange of commodities among the peasants encourages a large degree of self-sufficiency, minimizing rural dependence upon urban production. It is more than this, however. It is a source of additional food produce for urban consumers. And with this income from their sales on the market, the peasants purchase when available those city-made manufactured goods which they themselves either cannot make or cannot produce economically. In the urban collective farm peasant markets, the city populace sometimes adds to what the farmers have for sale, with produce from their own garden patch, with eggs, honey, etc.[3]

Soviet writers often remind their readers of the "capitalistic dangers" inherent in private trade. There is criticism of those "backward" members of the farm community who somehow manage to sell at the marketplace even that part of their produce which they are legally obliged to sell at fixed low prices to the State. In

[3] Justice Ministry USSR, "Kolkhoznaia torgovlia" ch. 50 in "Torgovlia" sec. 10, of *Spravochnik po zakonodatel'stvu dlia ispolnitel'nikh komitetov Sovetov deputatov trudiachchikhsia*, vol. II (Moscow, 1947), p. 122 and H.A. Diachenko, *Metody planirovaniia nalogov i sbor* (Moscow, 1947), p. 68.

spite of the fact that the Soviet government now finances most of what capital equipment is available at these markets, and earmarks scarce manufactured "city goods" for sale to the peasants, and in other ways facilitates and supports the collective farm peasant markets, yet this "unorganized" market is handled with caution. It is openly admitted that "between the organized market, occupying the dominant position in the commodity circulation within the nation, and the speculative tendency of the unorganized market, there is a fight going on."[4]

The collective farm peasant market, however, it will be shown, has been "domesticated" and though from time to time is cited for being "naughty," it is in no position to force the hand of the Soviet government. In the first place, those quantities of the most basic food products sold in the collective farm peasant markets are permitted to be nothing more than a residue or surplus left available for sale only after the local rural population is officially credited with having completed its compulsory deliveries to the State. Too many sacks of potatoes offered for sale by one peasant, too many liters of milk from a private source, or other signs of too great a "concentration of wealth" would quickly be noted and presumably would be taken care of by increasing compulsory delivery requirements, or by other equally accessible measures.

Though the collective farm peasant markets are free to charge what the traffic will bear, nevertheless farmers often are accused of exacting "speculatively high prices." Though it is a free market, yet it is made to feel the full impact of indirect governmental controls. The Large Soviet Encyclopedia indicates that such controls are exerted through 1) price competition from State planned retail prices, whenever an adequate volume of competing goods can be made available through State and cooperative trade outlets and 2) through national planning and regulation of money circulation and of the purchasing power of the population.[5]

Local demand on the collective farm peasant market ordinarily is most sensitive to competition from State and cooperative trade, for with supplies often limited, collective farm market prices tend to be decidedly over any level justified by costs plus a "reasonable" profit. Both State and cooperative prices, whether planned cen-

[4] M. M. Lifits, *op. cit.*, p. 33.

[5] State Scientific Institute "Soviet Encyclopedia," *Bol'shaia Sovetskaia Entsiklopediia* (Moscow, 1948), pp 1023–1024.

trally or locally, usually are lower than free market prices since they are calculated and planned closely so as to cover, it is claimed, no more than costs of production and distribution plus planned profits.[6] Actual and adequate competition is recognized as essential, for without it the peasants, it is stressed, tend to gather-in too large a share of the currency in circulation, thereby disrupting the nationally planned "balance" of income distribution at the expense of the urban and industrial wage earners.[7]

Effective manipulation of rural purchasing power was evidenced in the recent "currency reforms" accompanying de-rationing at the end of 1947. At that time, nine-tenths of the nominal value of wartime hoards of money largely in the hands of the peasants was wiped out by the simple device of exchanging uninvested funds on a ten to one basis, in terms of the new issue currency.

With its various effective though indirect controls over the collective farm peasant market, then, it is evident that the Soviet government has nothing to fear from the presence of this type of free enterprise. Aside from the fact that these markets gather together and sell all the individual basketfuls, sacks, bottles and cartloads of "surplus" produce and other small-scale output of what the peasants grow, gather or make, there is another important function which the collective farm peasant market is in a position to perform in the Soviet economy.

Effective market planning and adequate study of consumer choice has been lacking and is still lacking in the Soviet Union where characteristically retailers are obliged to concern themselves with obtaining adequate supplies of goods to sell, while sales themselves present no real problem and are pretty much allowed to take care of themselves.[8]

Due to the fact that the collective farm peasant market is "free" and automatically sensitive to demand and supply, it would appear that planners could benefit from following its price fluctuations,

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[6] A Mikoian speech at XVIIIth Party Congress, ref. M. M. Lifits, *op. cit.*, p. 95 and I. V. Stalin, *Voprosy Leninisma*, 10th edit. (Moscow, 1939), p. 398 indicate that consumer demand in the USSR keeps ahead of supply. Accordingly, even with active and effective competition from State and cooperative retail, prices on the free collective farm peasant markets are apt to remain somewhat "inflated" or above costs plus a "reasonable" profit.

[7] State Scientific Institute "Sovetskaia Entsiklopediia," *op. cit.*, p. 1026.

[8] V. Moskvin, "Sovetskaia torgovlia v tret'em godu piateletki," *Bol'shevik* No. 15 (Moscow, 1948), in collection No. 2, arranged by A. I. Berdnikov, B. I. Eidel'man, *Narodnoe khoziiaistva SSSR* (Gosplanizdat, Moscow, 1948), p. 436.

offerings and purchases, thereby gaining valuable information on the structure, levels and elasticities of consumer demand and availability of supplies. Such data should prove invaluable in achieving a planned equilibrium on the organized markets of State and cooperative trade. In other words, instead of being the antithesis of planning, the free collective farm peasant market, it is possible, eventually may become recognized as a barometer of consumer choice essential to the proper planning of all Soviet retail.

The individual collective farm peasant market may or may not occupy a separate and regular location. It may be in the village square, at railroad stations when the train comes through, or at river piers and other convenient locations.[9] Sales typically are made from booths, stands, tables, wagons and sleds or simply from the ground. In rural district centers and in urban areas, the approved type of collective farm peasant market is more apt to be found. It may include adequate sales facilities, even storage, refrigeration, running water, electricity and other modern conveniences found rarely in the more backward, generally prevailing type of peasant market.

The primitive nature of the typical collective farm peasant market can be inferred from the following list of "achievements" over which the Soviet Union was congratulating itself in 1937.[10] Unfortunately, more recent data is not available.

During 1937, 560 collective farm peasant markets in 141 of the "large cities" of the USSR were surveyed. "Not less than" 35 percent of the market areas were paved with cobblestones or asphalt. Over 55 percent of the market places had running water and about 70 percent had electric lighting. In 1939, in the entire Soviet Union, there were listed only 4,244 towns and "raion" (district) centers with the regular approved type of "large" collective farm peasant markets. Ninety-three percent were equipped with tables for trading. Eighty-four percent had available on-the-counter scales. Only about 25 percent of these best equipped markets had official government meat and milk inspection. Twenty percent boasted of ice

[9] Order of USSR Council of Ministers, "On expanding cooperative trade into cities and industrial communities, with food and manufactured goods and on increasing the production of food and consumer goods by cooperative organizations." (Text not made available to the public.) Nov. 9, 1946, Moscow. See *Pravda*, Nov. 11, 13, 1946.

[10] B. I. Gogol', "Sovetskaia torgovlia v gody Stalinskikh piatiletok," in collection of articles edited by M. M. Lifits, *Sovetskaia torgovlia za 30 let.* (Moscow, 1947), pp. 114–115.

or snow refrigerators, warehouse facilities, vegetable storage pits, etc. It becomes evident that much of the approved procedure indicated below for the collective farm peasant markets is just not applicable to those numberless marketplaces which lack even the most basic material facilities.

Local government and Trade Ministry authorities actually are jointly responsible for seeing to it that the necessary premises, accommodations and equipment are available for conducting business at the marketplace and that these are kept clean and serviceable.[11]

It is the duty of the local Trade Ministry authorities to figure out ways leading to the continued improvement and promotion of sales of the collective farm peasant markets.[12] They are responsible for carrying through on approved decisions. Final approval, however, and the funds necessary to instrument such decisions ordinarily come through the local Soviet which has the broad coordinating, planning and supervisory responsibility for all economic activity within its particular territory. It is the local Soviets which have the responsibility for arranging for approved veterinary and sanitary supervision at these local markets. They approve the estimates on collective farm peasant market operating expenses, including costs of improvements and replacements of equipment.[13]

Most of the current operating expenses of the collective farm peasant market are defrayed from funds collected through several types of small charges made for the use of the markets and its facilities. Rents are charged for space, booths, tables, etc., subject to the approval of the local Soviets, which are ordered to charge "as little as possible." The government authorizes the local Soviets to exact a fixed rate tax on all produce brought to market and 10 percent of this goes toward meeting the direct operating expenses of the market place. These fees are collected daily.[14] Subject to approval by the local Soviet, a special fee is charged by the management of the collective farm peasant market for cutting meat and for renting scales or other trading equipment.[15]

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[11] Justice Ministry USSR, *Administrativnoe pravo SSSR 1946* (Moscow, 1946), p. 350. Justice Ministry USSR, "Kolkhoznaia torgovlia," *op. cit.*, p. 121.

[12] N. I. Basenin, L. M. Darinskaia, N. A. Sokolovskii, *Organizataiia i tekhnika roznichnoi torgovli promyshlennymi tovarami, Moscow, 1948*), pp. 7–8.

[13] Justice Ministry USSR, "Kolkhoznaia torgovlia," *op. cit.* p. 121.

[14] Justice Ministry USSR, "Kolkhoznaia torgovlia," *op. cit.*, pp. 123–124, and Justice Ministry USSR, *Administrativnoe pravo SSSR 1946, op. cit.*, pp. 350–351.

[15] Justice Ministry USSR, "Kolkhoznaia torgovlia," *op. cit.*, pp. 123–124.

The approved type of collective farm peasant market is supposed to have a manager. He is appointed by the local organs of the Trade Ministry. It is his duty to see that all the rules of the marketplace are observed and he is authorized by special order of the local Soviet to take administrative action against persons violating the trade rules.[16] He is in charge of allocating space as required for the various functions of the marketplace.[17]

Collective farm peasant markets are ordered to operate in accordance with the health and sanitation requirements established by the State Sanitary Inspection of the USSR.[18] All regular market employees coming in contact with food are supposed to wear special work clothing and must carry an official certification of personal health inspection. Official meat and milk inspection is compulsory and to encourage compliance, this service is performed free of charge.[19] As already observed, many markets in actuality can provide neither sanitary conditions nor sanitary inspection.

While collective farms, collective farmers and individual peasants, generally speaking, engage in trade at prices determined on the market, manufactured goods may not be sold for more than the prices charged for similar items at local State and cooperative stores. This rule discourages "speculation," i.e. purchase for resale at a higher price. Persons selling produce which is the property of the collective farm are not to haggle over prices but are instructed to sell at prices determined in advance by the collective farm.[20] Most sales on the collective farm peasant market are of the privately owned produce of individual collective farmers, either produced individually or as a share of the collective product. Data is not generally available indicating just how important a part of total sales at the marketplace are consummated collectively by the collective farms themselves. Such sales generally are carried out at lower prices and with larger quantities of produce to be disposed of than is the case with individual collective farmers or private peasants selling their own small surpluses of goods. Bearing in mind

[16] Justice Ministry USSR, *Administrativnoe pravo SSSR 1946, op. cit.*, p. 350.
[17] Soviet Embassy, Wash., D. C., *USSR Information Bulletin*, Sept. 8, 1948, p. 537.
[18] Justice Ministry USSR, *Administrativnoe pravo SSSR 1946, op. cit.*, p. 350.
[19] Justice Ministry USSR, "Kolkhoznaia torgovlia," *op. cit.*, pp. 123–124.
[20] Order of Central Executive Committee and Council of Peoples Commissars USSR, May 20, 1932 in *Sobrannie zakonenii SSSR*, 1932, W° 38′, item 233 and 1933 W° 112 item 247, ref. Justice, Ministry USSR, "Kolkhoznaia torgovlia," *op. cit.* pp. 121, 123, and Justice Ministry USSR, *Administrativnoe pravo SSSR 1946, op. cit.*, p. 350.

these provisions together with the numerous indirect controls indicated, clearly the collective farm peasant market is free only in the narrowest sense of the word.

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## SUGGESTED PLAN FOR ASSIGNING CORN ACREAGE ALLOTMENTS TO INDIVIDUAL FARMS UNDER PRESENT PROVISIONS OF THE AGRICULTURAL ADJUSTMENT ACT OF 1938

The Agricultural Adjustment Act of 1938[1] invokes acreage allotments as the mechanism through which corn production is to be controlled when marketing quotas are in effect. Whether this is sound policy, and whether some different plan might be better, or whether the quota device itself is sound are questions which will not be considered. Differences of opinion have arisen over the method which should be used to distribute acreage allotments within a county, and that is the problem to which this discussion is directed.

### *The Arguments*

Two lines of argument are possible: one that since allotments are simply a device for limiting production, they should apply proportionally to all farmers on the basis of past production; that past production on a farm is measured by acres, and that, therefore, a historical corn acreage figure is the correct point of departure. This is the theory being followed by the administration. The other argument runs like this: that included in the over-all declaration of policy in the 1938 act are these objectives:

To conserve national resources;
To prevent the wasteful use of soil fertility,
To preserve, maintain, and rebuild farm and ranch land resources in the national public interest.

Though these objectives are in the strict language of the law to be accomplished through encouraging soil building and soil conserving practices and crops, they nevertheless permeate the whole act and are to be considered wherever and however possible;

The setting of national quotas on an historical acreage basis, and to a large extent county quotas on the same basis, is both under-

[1] 7 U.S.C., Ch. 35.

standable and necessary, but the use of historical figures below the county level is neither contemplated nor necessary within the word and meaning of the law. The law specifies four tests for determining farm allotments—tillable acreage, crop rotation practices, type of soil and topography—and these tests should receive direct consideration in the distribution of corn acreage allotments within a county.

Proponents of the first argument make these contentions:

1. Since historical figures are used for determining national and county allotments, it is logical that they be used in determining farm allotments.

2. Anything other than corn history on the farm is too indefinite and difficult to administer.

3. If large corn producers, in terms of past acreage, are cut too severely they will not cooperate and the effectiveness of the program will be diminished.

4. Any other scheme would tend to give larger allotments to productive land and accomplish most of the reduction on less productive land. This would to some degree defeat the use of national and county acreage allotments as a device for controlling production.

Proponents of the second argument make these contentions:

1. The historical method of allotment keeps a high corn acreage on some land that should reduce its acreage in view of the public interest in soil conservation, and penalizes the man who has worked into a sound rotation by making him cut his acreage still further.

2. The historical method tends to nullify the effectiveness of the program of three other public agencies—the Soil Conservation Service, soil conservation districts, and the Extension Service.

3. The law specifically states that tillable acres, crop rotation practices, type of soil and topography are the tests. Therefore, it is legally questionable if historical corn acreage can be made the principle criterion, with the four factors named in the law coming into play only to the extent that administrative regulations permit the disregard of historical acreages. The 1950 regulations are so worded that if a county committee makes no changes there is a presumption that the historical acreage "reflects" these four factors. But the law does not say that these factors are to be "reflected," it says that farm allotments will be apportioned "on the basis of" these factors.

4. The secretary's national and county acreage allotments should be made in the light of legal provisions on the allotment of individual farm acreages, and should be made with the assumption that desirable land-use practices and the public interest in soil conservation will be recognized in making the local apportionments.

5. There is now sufficient information, experience, and leadership to apply the provisions of the law directly.

So much for these arguments. Following is a suggested plan for making a direct application of the law as it now reads.

### *The Plan*[2]

Each county, on the basis of experience, trends, advice from soil conservation and extension personnel and in the light of desirable crop acreage relationships in the county would establish a basic corn acreage for the county, as a percentage of tillable crop acres. This percentage would be higher in commercial corn producing counties, lower in counties where corn makes up less of the rotation. In counties outside the commercial corn producing area where corn is relatively unimportant, but where individual producers raise large acreages, corn producing farms, rather than all farms, could be lumped together to determine a basic corn acreage. This could be done by combining farms in more than one county, if necessary. The determination of a "corn-producing farm" would involve corn acreage history, but not for the purpose of establishing the allotment itself.

This basic corn acreage percentage for the county or area would then be applied to each farm and a basic corn acreage allotment determined for each farm.

Crop rotation practices, soil type and topography would then be brought into the picture through an index system worked out for each county. Much thought and study should be put on the establishment of such indices. The PMA could help through the promulgation of certain basic rules and by supplying assistance. A fairly simple workable scheme would be necessary. As a very rough suggestion, for example, crop rotations could be classified into five groups, from most desirable to least desirable for the various types of agriculture in the county. Topography and soil type could be

[2] The use of tillable acres in determining allotments has been incorporated in a plan suggested by a group of farm leaders in Piatt County, Illinois, and provided the stimulus for preparation by the writer of the plan described in this paper.

handled in the same manner and under soil type, consideration could be given to soil amendments and structures which tend to improve soil productivity and prevent erosion. Categories for each of these items should be published so farmers in the county would become familiar with how the index worked and so they would realize that by better farming—not by growing more corn in non-quota years—they could increase their allotment in future years. These categories would be used by the committees in placing index numbers on each farm. Educational meetings could be held emphasizing the practices and conditions which influence the county index, and in that way the PMA, Soil Conservation Service, Extension Service, soil conservation districts, and farm organizations could see eye to eye and could all promote the same cause.

This plan most certainly contains "bugs" which those familar with administering the program can detect; and some of the "bugs" may be quite objectionable, but the writer feels that the basic idea is workable, though some modifications may be essential.

The following examples show in simplified form how this plan would operate.

COUNTY INDEX

| | Crop rotations | Topography | Soil type |
|---|---|---|---|
| Best | 5 | 5 | 5 |
| | 4 | 4 | 4 |
| | 3 | 3 | 3 |
| | 2 | 2 | 2 |
| Poorest | 1 | 1 | 1 |

APPLICATION OF INDEX TO SAMPLE FARMS

| | Crop rotations | Topography | Soil type | Index |
|---|---|---|---|---|
| Farm A | 4 | 5 | 5 | 14 |
| Farm B | 2 | 3 | 3 | 8 |
| Farm C | 1 | 2 | 2 | 5 |

LISTING SHEET

| Farm | Tillable acres | Basic allotment | Index | Adjustment factor | Adjusted allotment | Final allotment |
|---|---|---|---|---|---|---|
| A | 250 | 75 | 14 | +5/15 | 100 | |
| B | 250 | 75 | 8 | −1/15 | 70 | |
| C | 250 | 75 | 5 | −4/15 | 55 | |

The skeleton listing sheet above is for three farms of similar acreage but with the index figures shown in the previous illustration. The average index figure for a farm would be nine, in which case no adjustment would be made. Each index number then would warrant an addition or subtraction of 1/15 of the basic allotment. An entry in the last column "Final Allotment" would be made when the factor necessary to bring all farms within the county allotment was applied. In this last example it is assumed that the county determined that 30 percent was the right corn acreage percentage. Many variations of this plan suggest themselves. For example more categories could be added to any one or more of the tests considered, so that a difference of one (1) in the index would mean a smaller fraction of the basic allotment, or the relative importance of crop rotation practices, topography, and soil type could be varied by giving one item—crop rotation practices, let us assume—more weight than the others.

In case a shift to this method of establishing allotments seems too drastic in view of the fact that we are used to historical bases, a compromise might be made initially by combining the county corn acreage percentage and the historical corn acreage percentage for individual farms according to some definite formula such as 50-50, 60-40 or 75-25. The index would then be applied to this acreage.

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## FOOD DISTRIBUTION PROGRAMS DURING PERIODS OF HIGH LEVEL BUSINESS ACTIVITY

THIS note is addressed to the questions, (1) how large a group of low income people could be segregated for direct food distribution programs during periods of high level business activity without a special "means" or income test? and (2) how much additional dairy products, pork and eggs might they consume if given the economic opportunity?[1]

Two groups in the population appear to be eligible for special consideration without inquiring further into their income status.

[1] The government is currently supporting the price of dairy products and eggs, and hog prices have been near announced support levels in recent months.

The first is the group of people on public assistance programs. During the month of December 1949 these were:

| | *Millions* |
|---|---|
| Old Age Assistance and Survivors' Insurance | 2.7 |
| Aid to Dependent Children Including an Estimate of Adults in the Family | 2.1 |
| General Assistance Programs (Including State Relief) | 1.3 |
| Aid to the Blind | .1 |
| Total | 6.2 |

The second group is made up of families in which the wife or husband is missing due to death or divorce. Special family income surveys by the Bureau of the Census in 1948 disclosed the following:[2]

| | *Millions* |
|---|---|
| Nonfarm families headed by women | 3.4 |
| Nonfarm families headed by male—no wife present | 1.0 |
| Total broken families | 4.4 |
| Total individuals in broken families assuming 3 per family | 13.2 |

Of the broken families, with female head, 60 percent had incomes of less than $2,500 in 1949 and of the other broken families 46 percent had incomes of less than $2,500. Of all broken families 54 percent had incomes below $2,500 in 1948 and 44 percent had incomes below $2,000.

It is believed that most of the aid to dependent children goes to children in broken homes. Hence to avoid double counting these should be deducted and we obtain the total of 17.3 million people who would qualify if all broken families and families or individuals on public assistance programs were made eligible for direct food distribution programs.

Even though all broken families were made eligible, those in the higher income groups probably would not utilize the program. Assuming around half of the broken families would not apply for direct food distribution programs we arrive at the estimate that 10 to 12 million people or approximately 10 percent of our nonfarm population would take advantage of a direct food distribution pro-

[2] Series P-60, No. 6, table 4.

gram if the two groups—those on public assistance rolls and broken families—were made eligible.

*Quantities of Food Consumed*

Food consumption surveys made by the Bureau of Human Nutrition and Home Economics in the spring of 1948 indicate that families with $3,000 to $4,999 income after federal income tax consumed more dairy products, meat and eggs per person than families with less than $2,000 income after federal income taxes. The consumption per person of the moderate income families exceeded the consumption per person in the low income families by the following percentages:

| | |
|---|---|
| Dairy products other than butter | 35 percent |
| Butter | 57 percent |
| Meat | 26 percent |
| Eggs | 15 percent |

Thus, since roughly 10 percent of the nonfarm population would use direct food distribution programs, as indicated above, if given the economic opportunity to consume as much as the moderate income families they would increase the total U.S. consumption as follows:

| | Nonfarm | Total |
|---|---|---|
| Dairy products | 3.5 percent | 2.8 percent |
| Butter | 5.7 percent | 4.6 percent |
| Meat | 2.6 percent | 2.1 percent |
| Pork (estimated) | 5.0 percent | 4.0 percent |
| Eggs | 1.5 percent | 1.2 percent |

If a government program with reference to meat were limited to assistance in purchasing pork, the effect on increased pork consumption would be in the neighborhood of twice the effect on total meat since pork makes up roughly half of the total meat consumed.

In this note consideration of direct food distribution programs has been limited to dairy products, pork and eggs because these are the three perishable livestock products whose prices are currently near the support level. They also are products recognized as having high nutritional qualities. Direct food distribution programs, if started on an experimental basis primarily to supplement farm price supports, might well be limited to these three products

in the interest of simplicity. In view of the small increase in egg consumption which could be achieved by such a program, eggs might be omitted and the program limited to dairy products and pork, or whole milk dairy products and pork. Food consumption surveys show wider differences between low income and moderate income groups in vegetable and fruit consumption than in the consumption of livestock products. From the point of view of nutrition these products might well be included but their inclusion would have little effect on our "surplus" problem in the basic crops.

*Increased Consumption vs. Diversion*

The possibilities of increased consumption outlined above compare with recent purchase and diversion operations as follows:—
*Dairy products*—purchases of butter, non-fat milk solids, cheese and evaporated milk in 1949 amounted to three to four percent of total milk used and may run as high as five to eight percent in 1950.
*Pork*—no significant purchases were made in 1949 and price supports for the period beginning April 1, 1950, have not yet been announced.
*Eggs*—purchases of dried and frozen eggs were 1.8 percent of total production in 1948, 4.4 percent in 1949 and may be four to six percent in 1950.

WALTER W. WILCOX

*Library of Congress*

## MARKET SUPPORT GIVEN CERTAIN COMMODITIES BY THE IOWA SCHOOL LUNCH PROGRAM*

It took the exigencies of the "great depression" to create a sufficiently favorable climate of public opinion for the establishment of an integrated Federal-Local School Lunch Program. From the beginning a primary objective was the development of an outlet

* The author wishes to thank the following colleagues for many constructive suggestions. Leonid Hurwicz, Geoffrey Shepherd, Gerhard Tintner. He is especially indebted to Ercel S. Eppright, and the Home Economics Section of the Iowa Agricultural Experiment Station for permitting the use of student dietary schedules.
Contribution No. 2, Subproject 2, *A Nutritional Status of School Children; The School Lunch as an Influencing Factor* of the North Central Region Cooperative Project NC-5 *Nutritional Status and Dietary Needs of Population Groups.* (a) Iowa Agricultural Experiment Station, Ames, Iowa, as Journal Paper No. J-1745, Project 1021.

for surplus agricultural commodities as a means of supporting their prices. The importance of the price support objective in helping Federal Administrators secure appropriations has been obvious. The testimony of Judge Marvin Jones of the War Food Administration,[1] and the actual appropriations themselves[2] show that the support objective has remained prominent in the thinking of many administration and congressional leaders. However, appropriation figures expressed in terms of dollars do not present the actual support given by the school lunch program. In view of the emphasis placed upon the support objective by many congressmen, and federal administrators, it is appropriate to consider the magnitude of the real support given by the lunch program.

Data which make estimates possible have been made available for Iowa for the school years, 1946–1948. In order to make these estimates in real terms, it was necessary to determine the number of lunches during each of these school years. Purchases made by the schools for these lunches,[3] for each year, were compared with the purchases made by homes for the same number of lunches. The difference between these estimated purchases made by both groups indicated the support, positive or negative, given certain commodities by the Iowa school lunch program.

School purchase records, from a sample of schools, furnished the data for estimating the school purchases. The dependent variable was the observed number of purchases, and the independent variable was the number of meals served.[4]

For the purpose of estimating the home purchases for an equiva-

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[1] The attitude of Judge Marvin Jones and of the House Committee on Agriculture, is clearly shown in the Hearings upon these school lunch bills. U. S. Congress. House. Committee on Agriculture, 79th Cong. 1st. sess., Hearings on H. R. 2673, H. R. 3143 (H. R. 3370 reported.) Wash. Govt. Print. Off., 1945, p. 5.

[2] The total appropriation for the School Lunch Program in 1948 was $69,282,624, with 98 percent allocated to food assistance. The estimated appropriations needed for 1949 and 1950 were respectively $74,883,594 and $74,882,380. U. S. Bureau of the Budget. Wash. Govt. Print. Off., 1949. p. 387.

[3] For commodities such as potatoes, which were in surplus, the dependent variable included both the market purchases, and the surplus shipments allocated to the school.

[4] The variables, price of the commodity, and the prices of close substitutes, were tested for statistical significance before they were dropped from the final regression equation. In the case of butter, celery, and poultry, the variable, price of the commodity was significant, and the estimation equation for these three commodities became: $Q_{1(46-48)} = Q_1(P_{1(46-48)}, S_{(46-48)})$. For commodity 2 substitute the subscript 2 for the subscript 1 in this equation. $Q$ represents the observed amount purchased, $P$ represents the price of the commodity, and $S$ symbolizes the number of lunches served.

TABLE I. IOWA SCHOOL FULL LUNCH PROGRAM SUPPORT FOR CERTAIN COMMODITIES

| | 1947–1948 | | 1948–1949 | |
|---|---|---|---|---|
| | Positive | Negative | Positive | Negative |
| | Pounds | | Pounds | |
| **Canned Vegetables** | | | | |
| Corn | 8,439 | | 9,643 | |
| Green Beans | 199,446 | | 227,913 | |
| Peas | 69,785 | | 79,746 | |
| **Fresh Fruits and Vegetables** | | | | |
| Apples | | 56,897 | | 65,011 |
| Bananas | | 180,061 | | 205,761 |
| Cabbage | 52,776 | | 60,308 | |
| Carrots | 1,176,998 | | 1,344,989 | |
| Celery | 486,114 | | 555,497 | |
| Lettuce | | 123,951 | | 141,643 |
| Onions | 20,487 | | 23,411 | |
| Potatoes | 867,469 | | 991,282 | |
| **Meats** | | | | |
| Beef | | 119,548 | | 136,611 |
| Pork | | 400,877 | | 458,094 |
| Poultry | 90,977 | | 103,962 | |
| **Miscellaneous Commodities** | | | | |
| Eggs | | 84,565 | | 96,634 |
| Flour | 85,314 | | 97,491 | |
| Milk | 343,856[a] | | 392,934[a] | |
| Shortening | 65,879 | | 75,282 | |

[a] Gallons.

lent number of lunches a random sample of student dietaries was taken at 15 schools, both with and without lunch programs. In schools with an enrollment of over 200 students, a 10 percent sample was taken, while in schools of 200 students or less, 20 members of the student body were chosen at random. A week's complete dietary was recorded,[5] including the three meals eaten each day as well as snacks consumed between meals.

For that portion of the sample derived from students attending schools which served noon lunches, only home prepared lunches were included and most of these lunches were eaten during vacations and upon week ends. The Home Economics Section of the Iowa Agricultural Experiment Station compared these home prepared lunches of both student groups and discovered no important variations of meal patterns which would differentiate the home prepared lunches of communities with a school lunch program from

[5] These data were secured from records obtained by the Home Economics Section of the Iowa Agricultural Experiment Station for Project 1021.

the home prepared lunches of communities without a school lunch program. In addition the lunch dietaries of both groups agreed with previous results.[6] Hence, the total number of home prepared lunches observed included the observations of home prepared lunches of both groups.

The total food purchases made by the schools for lunches were subtracted from the corresponding purchases made by homes. This difference, or market support, was computed both upon a per meal basis[7] and a total basis. Table I presents the total support given certain commodities by the Iowa school lunch program for the school years 1947–1948, 1948–1949.

TABLE II. FEDERAL PURCHASE AND DISTRIBUTION[a] IN IOWA 1948–1949

| Food | Unit | Amounts |
|---|---|---|
| | **Bread Spreads** | |
| Honey | Pounds | 80,000 |
| Peanut butter | Pounds | 58,275 |
| | **Canned Fruits and Vegetables** | |
| Apple sauce | Pounds | 152,292 |
| Orange juice | Gallons | 96,758[b] |
| Prunes | Pounds | 36,000 |
| Tomatoes | Pounds | 504,330 |
| Tomato paste | Pounds | 107,325 |
| | **Dairy and Poultry Products** | |
| Cheddar cheese | Pounds | 262,500 |
| Dried eggs | Pounds | 98,800 |
| Non-fat milk solids | Pounds | 108,000 |
| | **Dried Fruits** | |
| Apples | Pounds | 45,000 |
| Appricots | Pounds | 23,000 |
| Figs | Pounds | 46,000 |
| Peaches | Pounds | 92,000 |
| Prunes | Pounds | 276,000 |
| Raisins | Pounds | 183,000 |

[a] Bangs, C. W. Director of the Iowa School Lunch Program, Dept. of Public Instruction. Des Moines, Iowa. Correspondence. Sept. 1949.

[b] These figures include citrus concentrate in terms of fresh equivalent.

Certain commodities were excluded from the study, either because the available records were not adaptable to this particular study, or because they were too fragmentary. The home records showed that, for most of these items, few purchases had been

[6] U. S. Department of Agriculture. Family Food Consumption and Dietary Levels. Mis. Pub. No. 405. (Farm Series) Wash. Govt. Print. Off., 1941.

[7] The per meal basis was used to extrapolate for 1948–1949. The number of meals served in 1948–1949 was multiplied by the per meal support given in the observed period, upon the assumption that the basic purchase patterns of homes and schools would not have changed significantly in one year.

made for lunch purposes and it appears that the best indication of the magnitude of support for such items is the 1948–1949 report of the Federal Purchase Distribution in Iowa, presented in Table II.

An examination of these results shows that the current Iowa "full lunch" program gives negative support to several commodities, perhaps the most important being beef and pork. However, these items are well represented in the students' total dietaries,[8] at least for certain age groups.

When only the lunch meal is considered, the school program appears to contribute both market support and nutritional supplementation in the case of milk. However, it is interesting to note that the Home Economics Section found that the total daily calcium intake of the 9, 10, and 11 year old sub-sample was equivalent for both school and non-school lunch students. Thus, it is possible that the apparent support is not equivalent to actual support, as has been the case for all other commodities.

The support given leafy green, and yellow vegetables[9] presents a clear cut example of support combined with dietary supplementation. However, a complete analysis of these Iowa[10] results suggests that the school lunch program's effectiveness as an over-all price support mechanism may have been overemphasized. It appears that a more realistic basis for advocating the school lunch program is one stressing adequate nutrition for all students.

PAUL E. NELSON, JR.

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[8] The Home Economics Section of the Iowa Agricultural Experiment Station examined the total dietaries of the portion of the sample composed of 9, 10 and 11 year old students. The Section found that the protein intake of the school lunch patrons was slightly below that of students with home prepared lunches. The difference was not nutritionally significant, since the total protein intake of all students approximated the recommended allowances.

[9] Lettuce was the one exception.

[10] It is possible that the results from more industrialized states, and perhaps from certain other agricultural states, will reveal a greater magnitude of support than there has been in Iowa.

# BOOK REVIEWS

*The Agrarian Problems of Madras Province*, V. V. Sayana. Madras, India: The Business Week Press, 1949. Pp. xxiv, 332. £1.

This book will be of considerable interest to those readers who would increase their understanding (and vocabulary) of land tenure conditions in India. The author sees the poverty of the large mass of the peasantry as the central problem in Indian agriculture. But the book does not deal with the full scope of the agrarian poverty problem. It is concerned primarily with conditions of land tenure and with land reform. As Dr. Sayana observes, "the land problem is the most vital of the Indian agricultural problems" and "the problem of tenure is of basic importance and is often a pre-requisite to other agrarian reforms."

After describing the physical features and demographic situation in Madras Province, the author leads the reader through a maze of details concerning the land, tenure, and credit systems of this southern India province. The discussion of the Ryotwari, Zamindari, Inams and other less important types of tenure is interesting reading but the reader is often confused by the great variety of tenure arrangements in use. Confused as the over-all picture appears to be, it adds up to the fact that the actual cultivator of the land is usually oppressed and exploited by the landowners, their intermediaries, and the money lenders. This situation is most apparent on the Zamindari estates where the Zamindars and their numerous intermediaries have used subinfeudation and other practices to pyramid their rents and to squeeze every possible rupee out of the land cultivators. One is inclined to agree that this is "the most amazing caricature of an ordered system of land tenure in the world."

Dr. Sayana's description of the land, tenure, and credit systems presents an excellent case for land reform. His recommended program includes: (1) expropriation of the larger estates with suitable compensation of the owners; (2) consolidation of the smaller peasant holdings into "family sized" units; (3) improved landlord-tenant relations—including measures to discourage the holding of land for rental purposes; (4) minimum wage legislation, decentralization of industry, and other measures to improve the lot of the

agricultural laborers; and (5) more cooperative and collective action in farming.

This is a commendable work. Its major limitation lies in the fact that the author has not gone far enough in discussing agrarian problems. Land reform undoubtedly is needed. But land reform in and of itself will not provide a lasting solution to the problem of rural poverty. The long-run solution of this problem calls for the interrelation and use of many programs, including increased industrialization, migration of workers out of agriculture, greater technological development, and a positive population policy.

RALEIGH BARLOWE

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*Rural Welfare Services*, Benson Y. Landis, New York: Columbia University Press, 1949. Pp. viii, 201. $3.00.

For the reader who wants a generalized survey of rural welfare programs, this is an excellent book. It describes the extensive array of welfare programs which have developed in rural communities, and gives a brief review of the functions of these organizations and agencies. Also, without being too obvious or overly critical, the author does an excellent job of showing the extent to which these activities remain uncoordinated and sometimes duplicating. In general, the book takes a positive approach, using well written brief descriptions of the programs, and ends with a discussion of the need for more coordination of function and planning to meet the welfare needs of rural areas.

There might be some disagreement with the author as to what should be included under the category of welfare services. The term welfare has come to have a somewhat limited meaning in many rural, especially agricultural circles. Oftentimes, this interpretation of the term has not been on too high a level of compliment. It might be argued, within a broad framework of rural welfare, that anything which contributes to a planned approach to rural well-being should be included within the field. On the other hand, some people would insist upon such an extremely limited interpretation as only those pertaining to relief planning. Within the present confusion of interpretations, the author has done a good job of selecting the services to be included.

The book starts out with an analysis of rural trends and needs, and with the historical evolution of rural welfare services. These are followed by brief, but very effective descriptions of the follow-

ing services: Federal-State programs of public assistance, including old age assistance, aid to dependent children, and aid to the needy blind; old age and survivors insurance; Federal-State social and health services, including child welfare, maternal and child health, and crippled children; Red Cross programs; Farmers Home Administration programs; recreation programs; youth services; control of child labor, social services under church auspices, probation services, veterans affairs, health and medical facilities and services, including public health units, public health nursing, services of health agencies, and medical care; and an analysis of the function of State agencies in relation to rural services. For the specialist in some one of the welfare fields, the descriptions will seem sketchy and limited. However, for the professional person working with rural people in some other capacity, and the rural dweller who wants to know more about the welfare services of his county and community, this book will be of real use.

The book has done a fairly good job of presenting the problems of the rural welfare worker on the one hand in being a generalist and on the other, being pressured by the social work profession to become better trained and specialized. However, one wishes that it had taken up some of the real problems of the tremendous lack of understanding in basic philosophy between the other rural professions and the field of social work. Probably few professionals understand each other less or want to come together less than the fields of the agricultural specialists and the fields of social work. Yet they are being forced to work with the same problems, many times the same individuals, and certainly the same areas and public officials.

Through State and Federal auspices, rural welfare planning is now including rural areas. In many areas of the country, as the city dweller moves to the suburban country, the areas of services directly overlap. Yet in many States, there are now as many if not more rural non-farm dwellers than there are farmers, the former working in cities. It can be hoped that this book will be read widely by the professionally trained agricultural specialist, as well as by other professionals working in rural areas, and by community leaders. Then someone should write a similar book for the social worker to read about the facts of the situation of agricultural programs and planning, so he too can better understand these fields of work and specialities.

CHRISTOPHER SOWER

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*Production and Welfare of Agriculture*, Theodore W. Schultz. New York: The Macmillan Company. 1949. Pp. 225. $3.50.*

Ted Schultz is certainly one of the most brilliant writers on matters of agricultural policy. In two respects, at least, he is without a peer among farm economists. First, he has an extraordinary ability to penetrate deeply into such fundamental things as the objectives of economic life. Second, he thinks in terms of the general welfare, analyzing agricultural policy as an important part of political economy.

The book draws heavily upon previously published articles. But even those who have read the articles when they appeared will be impressed with the breadth of Schultz' analysis, with the importance of the issues he discusses, and with the implications of his findings.

Schultz' point of view is best stated by quoting the opening paragraph of his Chapter 9, *Conditions necessary for economic progress in agriculture.*

> In a consideration of the economic problems that confront agriculture there is much wisdom in a return to the classical tradition of treating these problems within the context of the political economy. In our division of labor in professional effort we have departed from this tradition, and our work has been weakened as a consequence. . . . Whether our analysis pertains to labor, finance, trade, agriculture, or any other problem sphere, we will do well to formulate our approach in terms of the economy as a whole. We need especially to view agriculture as an integral part of the political economy and not as a series of particular farm problems treated as if they were self-contained.

This broad view of agricultural policy seems to be losing out in these days of specialization. But it is in the great tradition of Richard Ely and Thomas Nixon Carver. And the reviewer hopes that Schultz' book may help to revive this tradition. We will not promote the real long-term interests of farmers by agricultural legislation and agricultural programs alone. Nor should such legislation and programs be designed to benefit farmers at the expense of the general public. What we need is an economic program designed to encourage high; and fairly stable, rates of employment, production, consumption, and investment. We need an agricultural program that will contribute effectively to this end. If Schultz has done nothing more, he has insisted on discussing

* The views expressed by the reviewer are not necessarily those of the Council of Economic Advisers.

farm policy within the larger context.

Schultz does not claim to have covered the whole field of agricultural policy. He states in the preface that the book is concerned mainly with the economic allocation of farm resources, and that it does not deal thoroughly with the problem of poverty in agriculture. Again on page 158 he states, "In what has preceded I have examined the major features of the agricultural programs except those which pertain to credit, marketing, and consumption." Thus, large and important areas of agricultural policy are either not covered, or are dealt with rather incidentally. The reviewer hopes that Schultz will eventually bring out a second edition that will deal fully with these problems. Our present farm programs do very little to help low-income farmers, or to attain appropriate goals of consumption.

Schultz' main conclusions and recommendations are built upon his analysis of "allocative efficiency." He ably presents the classical argument that free market prices would tend to give us the best possible adjustments in production, employment, and consumption. But he also points out that many factors of immobility and market imperfection lead to risk and uncertainty, especially in agriculture and that this risk and uncertainty prevents allocative efficiency. This is his justification of "forward pricing." Schultz conceives of forward pricing as a supplement to the market-price mechanism, rather than as a substitute. He insists that "the prices or price schedules adopted should be those which achieve the desired output." Therefore, if farm incomes are too low he would make "compensatory payments" to farmers from the public treasury, rather than supporting prices at levels higher than those justified by competition.

The case for some form of forward pricing is very strong. The farmer and the public can both gain if uncertainty can be reduced. By now there is rather general agreement that the Federal Government should announce support prices for the major farm commodities far enough in advance to help guide the farmer in his production plans. But there is little agreement as to the levels of support, nor as to the methods of carrying them out. Supports based upon "parity prices," or even upon "pre-depression prices," are not likely to meet the test of allocative efficiency.

Perhaps we have too much faith in formulas. Perhaps no formula can take into account all the conditions of supply and demand

and tell us the ideal set of prices for wheat, potatoes, milk, and hogs. Perhaps we would do well to study the Canadian experience of setting price-support levels without any parity formula. But whether we improve our formulas, or whether we substitute the good old American practice of hearings, we cannot avoid the problem of resource allocation. We must find some way of setting the general level of price supports—and, especially of setting inter-commodity price relationships—in a way that is workable and in the general interest. Present legislation would try to do this, beginning in 1951, by adjusting support levels slightly and gradually in view of the current supply and demand situations for various commodities. Doubtless there are other ways of determining a workable set of forward prices, and Schultz' writings should help us find them.

Do we get around the problem of allocative efficiency by making "compensatory payments," or "production payments," instead of supporting market prices? The answer may depend partly upon the nature of the payment. If the payments are so much for each pound of cotton, or bushel of wheat produced we have artificially high returns to the farmer and artificially low prices to the consumer. Schultz' analysis would indicate that this situation would lead to inefficient use of resources. Of course, income payments might be made on some other basis: for example, a payment of $500 to each farmer, or a payment equal to 15 percent of the gross income earned by each farmer. Even this form of payment would fail to meet fully the classical test of optimum use of resources, since it would tend to perpetuate too many resources in agriculture. But it would not perpetuate maladjustment of resources *within* agriculture, since it would not upset the competitive balance between prices of different commodities.

Schultz suggests that if large payments are made to agriculture from the Treasury we will have to give increased attention to helping those farmers with the lowest incomes. This is doubtless right. Moreover, the reviewer would hope that we would find practicable ways of using the payments to help bring about adjustments in line with long-run allocative efficiency. Not even the payments for "welfare purposes" should be handouts. Instead of permanently subsidizing submarginal farmers, we should try to help them become more productive citizens—whether in farming or in industry.

If we are to hasten the major readjustments in agriculture we must be able to outline the efficient use of resources five to ten years from now. Then we might well announce some forward-forward prices covering the five-to ten-year period, perhaps calling for gradual increases in support prices for some commodities and gradual increases in others. But forward pricing alone may not enable the low-income cotton farmer to get into the dairy business. Liberal credit and government payments may be needed, too. A positive program for allocative efficiency might well include some form of "adjustment payments" designed to encourage area-by-area adjustments in line with prospective demands.

FREDERICK V. WAUGH

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*Our Farm Program and Foreign Trade*, C. Addison Hickman. New York: Council on Foreign Relations, 1949. Pp. xii, 108. $2.00.

With an input of less than two hours average reading time, the reader of this book is rewarded with a review of United States farm policies and programs from the 1930's through the Brannan Plan, a short statement of postwar foreign trade policy, and suggestions for reconciling points of conflict between farm and foreign trade policy.

Pressure group successes in achieving intensified import restrictions on certain farm commodities, export subsidies, and support prices well above world price levels are properly held to be out of gear with our liberal postwar foreign trade policies. While such specific points of conflict between farm and foreign trade policies are stressed they are a small part of the study, for, as the author aptly points out, the overt points of conflict are like the exposed portion of an iceberg while the essence of the conflict is submerged.

The reciprocal trade agreements program is held to be the keystone to United States foreign economic policy which now seeks through cooperative effort and understanding, world-wide elimination of trade barriers, full economic development abroad as well as at home, and international monetary relationships conducive to a high level of balanced trade. (The end goal being, of course, world peace and world prosperity.) However, nationalistic pressures have placed their qualifying mark on our generally liberal foreign economic policy in restrictions such as export subsidies, import quotas, trade agreement escape clauses and bogus quarantines.

The core of our farm policies, evolved out of the economic maladjustments experienced during the 1920's and 1930's, is the stabilization of farm commodity prices (at least reduction of the amplitude of the major price troughs) and an enlarged and stable income for agriculture. Conservation of soil and water resources and expanded and improved food consumption have in part been goals but they also have been a means of implementing price and income objectives. Hickman makes the point that farm policy goals, in large part, are not in conflict with foreign trade policies. The conflicts arise mainly out of the methods employed to achieve farm policy goals; namely, restriction of supplies of farm products and inflexible support prices. Support prices well above world market levels have priced some farm commodities, notably cotton, out of many foreign markets and have encouraged an increase, or at least continuance, of import restrictions on numerous other commodities.

It is argued that such nationally oriented programs are not only in conflict with liberal foreign trade policies, but are not well suited to the fundamental needs of agriculture. While such programs strike at the symptoms of agriculture's ills, they do not reach the underlying causes of farm problems; namely, underemployment of farm labor, instability of consumer income, and production risk arising out of the vagaries of nature. More promsing attacks on these basic problems would include measures to stabilize the general economy at a high level of employment and production, programs to facilitate mobility of agricultural labor, extension of crop insurance and perhaps a limited amount of price insurance in the form of forward price supports geared to market forces. Such courses of action would support rather than impede the development of the liberal elements in our foreign trade policy. Promotion of soil conservation and higher levels of nutrition are likewise constructive and consistent agricultural and trade goals.

On the foreign policy side, reconciliation can be promoted by an increased willingness to accept imports from abroad and by increased efforts to stimulate production in other countries through accelerated export of capital and technical know-how.

Farm and trade policy could be reconciled by withdrawing from our drive toward unrestricted trade and by adding further trade restrictions to those now in force. In pointing to this alternative, the author hastens to add that it would probably accentuate rather

than solve the problems of agriculture. Through such a course agriculture's remaining stake in foreign outlets would be jeopardized and the all-important home market impaired.

In summarizing the essential elements of a constructive reconciliation of farm and foreign trade policies, the author realistically points out the need for public understanding of general welfare aspects of farm and trade programs.

In the opinion of the reviewer, author Hickman has made a notable contribution, not so much in the way of invention, but rather in effectively consolidating a large and involved body of important subject matter. Further, the subject matter dealt with is of such great importance to all the American people that it should be widely read. However, to accomplish this objective, the study should be reduced somewhat in scope, popularized in style and appearance, and published in a low cost form.

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*Theory in Marketing*, edited by Reavis Cox and Wroe Alderson. Chicago; Richard D. Irwin, Inc. 1950. Pp. x, 340, $4.50.

*Theory in Marketing*, prepared under the sponsorship of the American Marketing Association, is another example of educational activities by professional associations. The well-known *Readings* series of the American Economic Association was followed last year by *Readings in Agricultural Policy* prepared under the direction of the American Farm Economic Association. *Theory in Marketing*, however, is not a compilation of previously published papers, as are the A.E.A. and A.F.E.A. volumes; rather, *Theory in Marketing* reflects an editorial objective which was "to seek out individuals known to be active in some area of theory that had significant implications for marketing and to invite them to work some of the ideas they were developing into a form suitable for publication."

Before considering some issues suggested by the book, it may be desirable to delineate its contents. The editors have arranged the papers so that the book has four parts.

Part I, New Concepts in Marketing, includes five papers. These deal directly or indirectly with questions involving research methodology, population potentials, psychology, behavior of organized systems, and the concept of competition. Demography,

*Gestalt theorie*, sociology, and political science, as well as economics, are among the disciplines from which the various authors extract concepts suggested as being useful for work in marketing.

Part II, Marketing Theory and Economic Theory, is the most substantial, in terms of number of papers and pages, of the four parts. At the outset, a brief is presented for the Stockholm (Heckscher-Ohlin) trade theory, supplemented by location theory, as a pedagogical and research approach to marketing analysis. Currently accepted (in orthodox circles) theory of the individual firm, framed in dimensions of marginal analysis, is set forth as an adequate set of economic tools for analysis of specified kinds of marketing problems, along with the assertion "that there need be no special economic theory of marketing." Another chapter champions the view that "economic theory can be used to explain and analyze in part some of the complex phenomena of marketing," and makes "a plea for the more intelligent use of economic theory in the study of markets and marketing." One writer calls for the development of the concept of "managerial enterprise" and its use in marketing analysis; while another writer emphasizes the need for more attention to the behavior of consumers *qua* consumers. Various price relationships are investigated by one of the contributors, under several types of vertical integration, and another contributor asks for a more realistic and adequate recognition of the time element in the study of demand.

Part III, Competition and Public Policy, includes three essays dealing with subjects as public policy and competitive theory, the relation of the economic theory to federal regulation, and the probable effects of f.o.b. pricing, a subject of current heated interest in view of recent court decisions and congressional discussions.

Part IV, Sharpening the Tools of Analysis, is a set of five chapters dealing primarily with applications of theoretical analytical tools to specific marketing problems. Subjects considered include marketing functions, analyses of retail concentration and dispersion, clustering of firms in a wholesale fruit and vegetable market, measurement of advertising characteristics, and an analysis of the question, How Many Service Stations Are "Too Many"?

The title, *Theory in Marketing*, is very appropriate for no "theories *of* marketing" are presented. Rather, one gathers the impression from the volume that the nebulous and faltering state of marketing principles is far from crystallizing into a homogeneous body

of principles which lead to theory(ies) of marketing. Moreover, one also acquires the impression that most of the contributors would accept the view that fruitful marketing theories must encompass principles from various disciplines of which economics is only one.

The reader will appreciate that the wide scope of "theory in marketing" certainly could not be encompassed in a single volume, and the editors were required to exercise judgment in the selection of segments to be considered. One might question, however, why an area such as econometrics has been largely slighted, especially in view of its promise in contributing to the development of "theory in marketing."

Concerning the disciplines, other than economics, drawn upon by the various authors, this reviewer is certainly not in a position to raise critical questions. With respect to economics, however, certain comments are in order. The volume, as a whole, is backward rather than forward looking. The need for the development and use of dynamic theories and process analysis, rather than of static theories, is not sufficiently recognized. Furthermore, the shaky foundation of the usually received theory of the individual firm is sufficiently appreciated in only one of the chapters, although a similar recognition is definitely pertinent, but neglected, in certain other chapters. The reader may well gather the view that the tools of economic analyses fashioned during the 1930's are being offered as the appropriate analytical techniques for use in marketing problems we face in the 1950's. Readers who are familiar with the more recent texts in intermediate and advanced economic theory, and who have followed developments in the professional economic journals during the past decade, will find little new in what the volume offers concerning the role of economics in marketing theory.

For agricultural economists, the issuance of *Theory in Marketing* is timely in view of the current emphasis on marketing research in the federal agricultural agencies and the land-grant colleges and universities. To the agricultural economist working in marketing, familiarity with the volume is desirable, if only for the reason that it will acquaint him with the present state of marketing analysis by workers (largely) in nonagricultural circles. It will become evident that the complexities of marketing problems, the need for improved concepts and techniques, and the difficulties in delineating significant and manageable problem areas are not limited to research in agricultural marketing.

SIDNEY HOOS

*University of California*

*Rural America and the Extension Service*, Edmund deS. Brunner and E. Hsin Pao Yang. New York: Columbia University Press, 1949. Pp. xii, 210. $3.00.

This is an authentic, well documented account of the origin, development, functioning and achievement of Cooperative Extension work in the United States. Its authors clearly have captured the meaning and philosophy of Extension. Their special interest in the fields of social relations and of education is in evidence throughout the study. The book is well organized and exceptionally well written. It is documented with factual information and a splendid bibliography follows each of the eleven chapters.

In this book the Cooperative Agricultural and Home Economics Extension Service is interpreted as the largest rural adult education enterprise in the world. It is pointed out that from the beginning of the Department of Agriculture in 1862, education was, and still is, one of its basic purposes. The unique manner in which this educational responsibility has been shared cooperatively with the states through the Land-Grant College system is clearly presented.

The authors express the opinion that perhaps the basic element in the success of Extension has been its flexibility in fitting into the cultural patterns and changing needs of the people it serves. The local county program is largely what the people concerned make it. Extension adheres to two principles that are a deep-seated tradition in American education. First, it permits a maximum amount of local control and second, it emphasizes "teaching by doing" in real life situations. The counterpart of this second principle is "helping people to help themselves," which is the major focus of Extension teaching.

The "whole family" approach to education is cited as another significant contribution of Extension. The farm home, to a far greater extent than the urban home, is an integrated, functional unit. The Home Demonstration and 4-H Club programs of Extension education in particular, emphasize this center of interest of the farm family. While Extension is primarily a program of adult education, its youth program, embracing nearly two million boys and girls in 4-H Club work each year, is recognized as an outstanding educational force. More and more, the authors conclude, Extension is leading rural people also to an interest in studying and improving their local communities and to an interest in understanding public affairs and those forces even beyond the community that so vitally affect the welfare of the individual family.

Chapter 10 is an evaluation of Extension work. The following paragraph is a good summary evaluation.

> The evidence shows that the Cooperative Agricultural and Home Economics Extension Service is a democratic system of rural adult education. It has helped increase farm income and improved the uses of that income. It has made the home unit central in its philosophy and in much of its teaching. It has set up a unique cooperative relationship between the local people and at levels of government from federal to county. It has been interested in conserving both natural and human resources and in promoting a higher level of living for families and communities, and it has paid attention to such new challenges as education for leisure and for better health. It has remained politically non-partisan, though not uninterested in public policies, especially such as affect agriculture. Extension has not covered its field completely and has had to make many adaptations to its heavy load. It has not reached the illiterate and the very poor as well as it has others though it has done far better than many think. The temptation to rest on laurels already won, and sponsor a stereotyped program, has not always been resisted in counties or some states, though as a unit it has been remarkably adaptable and dynamic. Although its local programs are not always as well integrated within the Service and in relation to other agencies as is desirable, these and other faults are no more universal throughout the Service than are its strong points. They point to problems that must be solved in the future. (p. 162)

The concluding chapter deals with principles of Extension work. This is an excellent summary treatment of principles that have been proven sound by more than a third of a century of experience in Extension. As the authors point out, these principles are just as applicable to Extension endeavors in foreign countries as they are in any part of the United States. One of the principles emphasizes that to be successful, any Extension program must take into account the habits, customs, and the culture of the people for whom it is intended. One of the purposes of the authors in making this study was to interpret Extension for those countries which may be contemplating a similar rural educational effort, perhaps as a phase of the United Nations program. This work should be most helpful in that connection.

*Rural America and the Extension Service* will be read with pride by those who are in or closely affiliated with Extension. Although largely commendatory, it does reveal weaknesses and shortcomings which Extension people should accept as a challenge. Many counties and even some states have not measured up to the generally favorable standard of achievement of Extension as a whole. To

them, this study offers a special challenge, but it will be found constructive and helpful.

R. B. TOOTELL

*Montana State College*

*Wartime Economic Planning in Agriculture*, Bela Gold. New York: Columbia University Press. Pp. 594, 1949. $6.75.

The publishers of *Wartime Economic Planning in Agriculture* have billed it as "an intensive study of national economic planning in action . . . " and a more appropriate billing could not have been found. The text is concerned with agriculture, but the focus is on economic planning; the wartime experience in agriculture conveniently provides a cadaver for purposes of an incisive analysis of economic planning. As such the study should be of interest to a wide professional audience: the agricultural economist, the political scientist, the historian, the agricultural administrator, and perhaps others. But lest any of these labor under a misapprehension, Professor Gold has not written an easy, sweeping tract on planning. Rather there emerges a long, heavily documented, fact-laden, case study of economic planning in agriculture. But though the case is presented in detail, the author cannot be accused of failing to reach conclusions. His conclusions ring sharp and clear, and it is to certain of these that this review turns.

In the language of Professor Gold, "War developments set U. S. agriculture three immediate major tasks: to compensate as far as possible for the curtailment of imports essential to an effective war economy; to expand total food production, especially in certain categories, sufficiently to fulfill the urgent requirements of the allies and our armed forces in addition to supplying domestic civilian needs; and to pursue both of these objectives with minimum demands on manpower, manufacturing facilities and raw materials, in order to facilitate the functioning of other critical war industries." But the record of mobilization in U. S. agriculture for the accomplishment of these tasks, he argues, is a dismal, discouraging record. Total food production did expand, but that expansion was largely exhausted by 1943. And the expansion that did take place was not elicited in the main by wartime planning activities, but rather from favorable weather, increased consumption of fertilizer associated with rising incomes and the continued adoption of hybrid seed corn.

Shortcomings on the production side were, however, most serious with respect to altering the composition of output. Farmers were delighted to produce more where they could, but habit and lack of incentive to shift their efforts caused them to go along producing in prewar molds. Certainly the bold leadership needed to induce shifts in production was not forthcoming from Washington: "the acreage goals actually issued during the war were characterized by an untoward restraint in the scale of suggested adjustments, by a progressive shrinking back of goal levels as the emergency wore on and needs rose, and by a studied avoidance of vigorous conversion proposals throughout the period of mobilization."

The record, as Professor Gold interprets it, does not change when the searchlight turns to other areas, e.g. the use of manpower on farms, the demand for farm machinery and food consumption adjustment. Exaggerated self interest first by farmers made extraordinary demands on resources needed in other war industries, and second by consumers drove per capita food consumption to all time highs. And the performance of the United States in the sharing of foodstuffs with our allies bordered on a national disgrace. Hence the general conclusion, planning efforts in agriculture during and after World War II failed time after time to achieve results commensurate with the demands of war.

Now to a person such as this reviewer, who was showered by releases from the U.S.D.A. during the war years describing in the glowing terms of a "company newspaper" the achievements of U. S. agriculture, this study came along like a breath of cool, fresh air. But as one pursues the account from one failure to the next, one begins to feel that something must be wrong here too. One suspects that the criteria employed by Professor Gold to measure the performance of planning activities in agriculture must be too rigorous, too exacting, too rational. In the first place it should be recognized that farm producers and farm leaders were far removed from the firing line, hence were not instilled with the sense of urgency that comes where war is close at hand. But more important, national economic planning is formulated and executed through political processes, and the end product of these processes in a democracy must be a compromised product. Thus national economic planning in whatever field tends to be inefficient by the rational standards of an expert in that field. Professor Gold recognizes certain of these difficulties in a final section analyzing the method and techniques

of economic planning. But such a recognition does not soften the damning criticisms that come before.

In sum, Professor Gold has written a courageous book—a book that needed desperately to be written. You may feel with this reviewer that relatively—relatively to the deterrents of planning—things were not quite that bad. Still those folks who know the war experience of agriculture will recognize the force and logic of his argument, and those who are not so acquainted have that opportunity opened to them now by a reading of the volume *Wartime Economic Planning in Agriculture*.

WILLARD W. COCHRANE

*Pennsylvania State College*

*Real Estate Principles*, Henry E. Hoagland. 2nd edition. New York: McGraw-Hill. 1949. Pp. xi, 667. $5.00.

This revision, like the original edition, is intended to provide an introductory text in real estate. The author covers developments since his earlier work, particularly Federal housing policies. He has also reorganized and revised the content. The present organization is into thirty-two chapters, and their virtual independence enhances flexibility. Each chapter is followed by a short bibliography and questions. Comprehensive problems, case studies and diagrammatic illustrations are seldom utilized.

Concepts in the field are, with exceptions, thoroughly explained. The mechanics of title transfer, mortgages and leases, appraisal, financing and zoning are concisely stated. Cautions to real estate novices are abundantly sprinkled in among Prof. Hoagland's pages. Especially noteworthy are his comments on deeds and his healthy skepticism of appraisal formulas. The chapter on the construction industry notes major defects in summary fashion; analysis is largely confined to doubts about the future of prefabricated housing. Several chapters are devoted to important factors in real estate valuation, but a minimum of consideration is given here to the economics of the price-making process. The highly segmentalized and localized markets for rental and ownership properties offer numerous problems of interest that might well have been developed. Some inkling of these problems is given in the discussion of rent control. Local survey techniques, their uses, and sources of information for real estate men are joined for brief treatment in a single chapter.

Several current issues in the field are included: taxation, city planning, rent control, public housing assistance to veterans, and the real estate cycle. Property tax assessment and incidence problems are suggested. The author amplifies the shortcomings of real property levies (special assessments in particular) but is brief on alternative urban revenue sources. His description of the motives for real estate ownership by absentee institutions illustrates the current exemption controversy. Rent ceilings are viewed with mixed feelings. Prof. Hoagland implies that controls induced family "spreading out" and home ownership, yet limited the filtering down of residential units. Caution in drawing such conclusions from 1940–45 data is advisable; these results may be attributable to added and even more powerful stimuli. The discussion of public housing centers on policy issues at the Federal level. FHLB and FHA operations, areas in which the author has special qualifications, are succinctly presented. A chapter on housing aid to veterans presents valuable financing advice to this group. Fluctuations in real estate "activity" during the past 30 years serve Hoagland as a norm of future cycle motives and consequences.

This edition deserves attention by those responsible for basic real estate courses. Instructors in land economics will find it a useful reference on real estate instruments and practice. For the economics of urban land use other sources should be considered.

SIDNEY SCHMUKLER

*Drake University*

*Price Theory*, Sidney Weintraub. New York: Pitman Publishing Corporation. 1949. Pp. xiii, 445. $5.00.

This book "presents a systematic and reasonably complete statement of modern price theory for students who already have some acquaintance with the subject." It is intended to be used both by specialists in economics who have read the major works and by non-specialists taking a course in advanced economics.

The author has succeeded in writing an excellent advanced textbook which is at once rigorous and well-written. It is particularly valuable for the specialists in economics including agricultural economics, and large sections of it will be useful to the non-specialists as well.

A feature of the book is the incorporation of much of the modern development in the traditional field covered by the intermediate

or advanced course in economic theory. A rather extensive use of abbreviations and symbols lends conciseness to the book, although they tend to make it a little heavy going. On the other hand, a wide-scale use of charts illustrates and clarifies the text. The indifference curve approach is used not only in the development of demand but in the other sections of the book as well.

The organization of the book is convenient for use as a textbook and the table of contents is sufficiently descriptive to facilitate the use of various sections of the book for those interested only in selected topics. It is divided into four parts: I. Demand and Cost Analysis (100 pp.); II. Market Behavior of the Firm (190 pp.); III. Multiple-Product Firms (50 pp.); and IV. Dynamic Analyses (100 pp.).

Professor Weintraub omits a methodological section, explaining his unorthodox beginning in a convincing paragraph in the preface. "At this date I take it that there is no need to defend the thought-clearing that economic theory provides in approaching concrete economic problems. With this viewpoint in mind I have abandoned a lengthy introductory discussion on the nature and content of economic analysis. I doubt that remarks on the scientific character of analytic thinking convince anybody not already impressed with the legitimacy and importance of theoretical study. It happens, too that economists are more at home in doing their work than in preparing significant generalizations on their methods and techniques."

Part I begins with an excellent summary of the indifference curve approach to consumer demand which is considerably simpler than the presentation by Hicks. The author moves directly from demand to cost curves, following this with a brief treatment of the law of variable proportions (diminishing returns). Although the explanation of the latter is accurate and is illustrated with both chart and example, the significance of the relationships involved is not fully developed. Other aspects of costs and factor productivity are more adequately presented, but there is some tendency to emphasize the possible permutations and combinations rather than to explain the principal variations which are likely to be important.

In Part II, which comprises about half the book, the market behavior of the firm is first presented under conditions of pure competition; discussion includes the determination of output of the single firm already in existence, the planning of new firms, the prob-

lem of entry of new firms, and stable and unstable equilibria. Then the behavior of the firm under various types of monopolistic conditions is examined beginning with the general solution and proceeding through the various forms of monopoly. Special problems treated include selling costs, product variation, monopsony, and spatial inter-dependence.

This long section contains much of the modern theory of imperfect competition originally presented by Chamberlin and Mrs. Robinson together with later additions and revisions, and on the whole it is easier to read than the original sources. The use of indifference curves throughout this section permits a presentation that is more complete than older methods allow and possibly more rigorous. There are offsetting disadvantages, however, of the use of this technique. Solutions appear less clean-cut and straightforward. To some extent this is the result of necessary refinements which limit the earlier generalizations, but part of the trouble appears to be a preoccupation with the mechanics of indifference curve solutions which prevents the generalizations that are warranted.

In Part III the behavior of multiple-product firms deals with the interdependence of cost and its effect upon the tendency toward vertical integration, and with the interrelationship of demand in discriminatory pricing and in complementary and substitute products.

In the final section, dynamic analyses are introduced. The theory of anticipations and uncertainty, imperfect equilibrium, multiple period anticipations, and path analyses are summarized briefly but adequately.

Throughout the work a high level of scholarship is maintained. In each section the author presents the modern theory which has been developed on the various topics. Annotated bibliographies at the end of the chapters constitute an excellent guide to the available source material. All in all, this first-rate advanced textbook is an important contribution which will be useful for economists as well as students.

L. J. ATKINSON

*Department of Commerce*

*Studies in Income and Wealth.* New York: National Bureau of Economic Research, 1949. Pp. xii, 450. $6.00.

The issues treated in the five parts of this volume fall into three

major fields of inquiry. Part I deals with changes in the occupational distribution of workers since 1820, Parts II and III discuss inter-group comparisons of real income, and Parts IV and V explore methodological problems in economic forecasting.

Part I consists of two comprehensive papers of historical-statistical nature. *Solomon Fabricant* traces "The Changing Industrial Distribution of Gainful Workers" from 1820 to 1940 from decennial statistics. *Daniel Carson* in his paper on "Changes in the Industrial Composition of Manpower Since the Civil War" goes into considerable detail in the distribution of the labor force over a large number of industries and occupations. In both papers, the emphasis is upon the accuracy of statistical measurement rather than upon interpretation of the changes shown.

In Part II, *Nathan Koffsky* compares "Farm and Urban Purchasing Power" for the year 1941. Being aware of the many difficulties in determining the "equivalence" of living standards between groups of different tastes and consumption patterns, he limits himself to measuring the differences in the price levels between farm areas and cities, and expressing the cost of living of a farm family in terms of city prices, and that of a factory worker's family in terms of farm area prices. He warns that these comparisons cannot be used for establishing equivalent levels of living for farm and city people; they do, however, throw considerable light on the "income parity" concept which figures so strongly in our national farm policy.

The national averages of urban prices (from the BLS) are expressed as relatives of the national averages of farm area prices (from the BAE) for commodities of reasonably comparable qualities, and these price relatives are weighted by the farm family expenditures (adjusted for the value of farm furnished foods). The budgets used were those of farm families in the $250–500 money income range, and of city family in the $500–1,000 range, (from the BLS and BAE Study on "Family Spending and Saving in Wartime," and the "1935–39 Family Expenditure Study"). With the non-money income of farm families in the form of housing, food and fuel, the farm families in the $250–500 money income group averaged $807, the urban families in the $500–1,000 group $875, in 1941. Farm produced foods are valued at farm (not retail) prices. All the commodities considered accounted for 85 percent of the farm family expenditures, and 82 percent of the city family budget.

The total collection of consumer goods and services of the farm

family valued at city prices was 30 percent higher in cost than on the farm; the city family budget valued at farm prices was 12 percent lower in cost. The greatest difference in price levels, of course, appeared in food. Had the farm family purchased its food at city prices it would have cost 67 percent more; clothing 29 percent more, medical services 14 percent more, furniture and furnishings 6 percent more, fuel, light and refrigeration 17 percent less, cost of purchase and operation of automobiles 4 percent less. Price differences for housing costs were held at zero, on the assumption that the median monthly rental of $4.72 on farms and $24.60 in cities reflected primarily quality differences—an assumption about which Mr. Koffsky does not feel any too happy.

These differences in price levels between farm and city are then applied to the national average net incomes per farm operator (adjusted for unpaid family labor) of $928 in 1941 and per factory worker of $1,479. The result: the farm operator's income would have had to be 25 percent higher, or $1,160, to have purchasing power parity with the factory worker's income. (Note that the Price Parity Index (1910–14 = 100) for 1941 stood at 95 while Koffsky's "purchasing power parity index" was 80. It is, of course, questionable, whether the average income of the "factory worker" is a proper standard of comparison, primarily for two reasons: the worker's family size is smaller, and the farmer's income includes not only labor, but capital and land earnings as well.)

Koffsky presents the result of a similar computation for 1945. In that year, the farm operator's income was 3 percent above purchasing power parity with the factory worker's, that is practically at parity (the Price Parity Index in 1945 was 121).

Koffsky's very interesting paper is followed by highly informative and constructively critical comments by *Margaret G. Reid*, (really quite a paper in itself, of 27 pages, with revealing breakdowns of price and consumption data), *D. Gale Johnson* and *E. W. Grove*.

In Part III, *Hans Staehle* gives a brief review of various methods that have been proposed for "International Comparison of Real National Incomes," finds them all wanting, and suggests the "Dissimilarity Method." It pairs the families (or income groups) of two countries that show the smallest difference in consumption patterns. That is, it locates those incomes where the distribution of consumption expenditures over the various goods, at fixed prices,

are most similar, and implies that the real income of these two groups in the two situations are most nearly comparable. *Abraham Bergson, Dorothy S. Brady* and *E. M. Snyder, Morris A. Copeland,* and *W. Vickrey* in their comments are skeptical as to the superiority of this method over the more conventional ones. These papers are purely methodological in nature, and even the few empirical data presented by Staehle for illustration deal only with food budgets of a few families in a few countries, rather than with total consumption patterns and aggregate national income data.

Part IV is a "Review of Economic Forecasts for the Transition Period" by *Michael Sapir.* Various forecasts of national income and employment for 1946 made in 1945 are compared with actual developments, and explanations for the errors are attempted. "Washington Forecasts" are subjected to a cogent analysis, enlightening as a post mortem inquiry and constructive in suggestions for making the method of model building more reliable. Forecasts by Woytinsky and by the Econometric Institute are treated more briefly—perhaps because they were not so far off as the others. A blending of mathematical model-building, historical-statistical analysis, and judgments concerning socio-psychological factors and probable policy decisions, in Sapir's opinion, should yield a more appropriate kit of tools for future forecasts. Comments by *Lawrence Klein, Everett E. Hagen, Clayton Gehman, Morris A. Copeland* and *Rufus S. Tucker* round out the discussion—perhaps with a bit too much polemics about whether forecasting is a science or an art.

In Part V, *Franco Modigliani* examines "Fluctuation in the Saving-Income Ratio: A Problem in Economic Forecasting." He maintains that the remarkably constant saving-income ratio observed during recent decades preceding the war cannot be extrapolated, nor can the increasing propensity to save observed with rising individual incomes at any given time be assumed to apply to national aggregates, if a steep rise in per capita real income occurs over time. Mosak's and Smithies' formulas, although quite different in their elements, point to a saving of $22 billion in 1950, for an assumed disposable income of $154 billion at 1943 prices. This corresponds to a saving-income ratio of 14 percent. Modigliani proposes a long-run secular propensity to save of around 10–11 percent—under conditions of rising real incomes at a rate of 2–4 percent per year (note that for 1949 the commerce department reports indicate personal savings at around $14 billion, or 7–8 percent

of disposable income). Superimposed upon the long-run saving function is a short-run cyclical one, with the saving-income ratio rising and falling with the cyclical income changes. Relatives between national income and profits and corporate savings are also explored.

RAINER SCHICKELE

*North Dakota State College*

*Farm Wood Crops*, John F. Preston. New York: McGraw-Hill Book Company. Pp. 302. $3.75.

While farm forestry has been given rather thorough treatment in numerous texts during the past several decades, very few have integrated this phase of farm management into the larger sphere of farm operations. In *Farm Wood Crops* Preston, who was formerly Chief Forester of the Soil Conservation Service, provides a better orientation for his subject than most of his predecessors.

One hundred and forty million acres of forest land included in farm ownerships represent one third of the commercial timberland in the United States. Yet farm woodlands contribute a very small part of the income to most farms and an irregular one at that. For the most part, they occupy the poorer soils and steeper areas functioning importantly as vegetative cover and wildlife habitat with associated beneficial influences. Preston calls attention to the state of neglect into which most farm woods have fallen by citing the fact that two-thirds of the products are classed as low grade, principally fuelwood. The major emphasis of the book is placed upon improvements in technical management practices by farm operators through farm management plans, silvicultural measures, removal of low grade trees and products, improved marketing techniques and practical logging procedures.

Several chapters in *Farm Wood Crops* are devoted to public assistance programs available to the forest owner. Both Soil Conservation Districts and Farm Forestry Projects are treated in some detail and their functions described. It is of interest to note that the Extension Farm Forestry Projects sponsored by the Forest Service in cooperation with the State Forestry Departments have operated independently of the Soil Conservation Districts, since this program was transferred from the Soil Conservation Service in 1945. This complete separation of farm forestry from other agricultural conservation programs by the Forest Service strik-

ingly points out a lack of integration and de-emphasizes the contention of the Forest Service that forestry and agriculture are so closely allied.

Preston points out the value of the Soil Conservation District to the farmer in providing a means of cooperative assistance. Yet the District program has failed to achieve a continuity of conservation programs because it has shied away from enforcement of its cooperative agreements with owners or any attempt to invoke land-use regulations. The role of the District thus becomes rather dubious as a means of establishing and enforcing conservation programs on the land. But it may serve a purpose which has heretofore been seriously neglected. In a majority of non-resident held forest holdings and a large minority of farm owned woodlands owner-operation is not practiced. Distance, specialized equipment requirements and technical forestry problems often keep many owners from conducting their own forest operations. If this function could be handled for them through a Soil Conservation District a considerable improvement in forest management is conceivable.

The time has come for a re-evaluation of the role of private ownership in the conservation of resources. Day-to-day economic pressures upon private owners are such that a complete conservation plan can be destroyed in a very short time. While the economics of conservation have been fairly well probed, the solutions available in our present institutional structure are still very hazy. Americans traditionally shy away from the concept of land-use regulations, yet all of our programs of subsidy, "education" of landowners, and technical assistance are not doing the job.

The reviewer hoped that Preston would throw more light on these basic questions because of his broader concept of farm forestry and its place in the farm economy. Farm forestry may be the toughest nut in the conservation problem because time-preferance and low income aspects are dominant factors. The task of re-appraising our farm and forest conservation problems and the existing and proposed solutions still remains to be done. When the proper incentive or compulsion measures have been worked out, Mr. Preston's text will be of value in applying the technical practices required.

CHARLES H. STODDARD

*Izaak Walton League of America*

# PUBLICATIONS RECEIVED

Bailey, Stephen Kemp, "Congress Makes a Law," New York: Columbia University Press, 1940. Pp. xii, 282. $3.75.

Barre, H. J. and Sammet, L. L., "Farm Structures," New York: John Wiley & Sons, Incorporated, 1950. Pp. xi, 650. $7.00.

*Brunner, Edmond deS and Yang, E. Hsin Pao, "Rural America and the Extension Service," New York: Columbia University Press, 1949. Pp. xii, 210. $3.00.

Casselman, Paul Herbert, "Labor Dictionary," New York: Philosophical Library, 1949. Pp. xi, 554. $7.50.

Clark, Andrew Hill, "The Invasion of New Zealand by People, Plants, and Animals," New Jersey: Rutgers University Press, 1949. Pp. xiv, 465. $6.00.

Cohen, R. L., "The Economics of Agriculture," Cambridge: Cambridge University Press, 1949. Pp. xvi, 216.

*Cox, Reavis and Alderson, Wroe, "Theory in Marketing," Chicago: Richard D. Irwin, Incorporated, 1950. Pp. x, 333. $4.50.

Guthrie, John L., "The Economics of Pulp and Paper," Pullman: State College of Washington Press, 1950. Pp. xi, 194.

Hoover, Glenn, Ed., "Twentieth Century Economic Thought," New York: Philosophical Library, 1950. Pp. xiii, 819.

Malone, Carl C., "How to Make Your Farm Pay," Ames: Iowa State College Press, 1950. Pp. xi, 371.

"Midwest Farm Handbook," Ames: Iowa State College Press, 1950. Pp. 232. $2.25.

Paiva, Rui Miller, "Garantia de Precos Estaveis e Remuneradores a Agricultura de São Paulo," São Paulo, Brazil: Secretaria da Agricultura, 1949. Pp. 79.

Parmelee, Maurice, "Geo-Economic Regionalism and World Federation," New York: Exposition Press, 1950. Pp. xi, 137. $2.50.

*Preston, John F., "Farm Wood Crops," New York: McGraw-Hill Book Company, 1950. Pp. 302. $3.75.

"Problems in the Study of Economic Growth," New York: National Bureau of Economic Research, 1949. Pp. iv, 250. $2.00.

"Statistical Yearbook 1948," New York: Columbia University Press, 1950. Pp. 482. $6.00. First in an annual series prepared by the Statistical Office of The United Nations.

United Nations, Department of Economic Affairs, "Economic Survey of Asia and the Far East, 1948," New York: Lake Success. 1949. Pp. xviii, 289. $2.00.

*Weintraub, Sidney, "Price Theory," New York: Pitman Publishing Corporation, 1949. Pp. xiii, 447. $5.00.

* Reviewed in this issue.

# PRELIMINARY PROGRAM FOR THE ANNUAL MEETING OF THE AMERICAN FARM ECONOMIC ASSOCIATION

## Montreat, North Carolina, August 28, 29, 30, 1950

### GENERAL SESSIONS

Influences Generating Basic Changes in the South
- Economic Prospects of the South
  - GEORGE AULL—Clemson
- Dynamics of Farm Adjustments
  - C. F. SAYRE—U. S. Department of Agriculture
  - *Discussant,* JOHN BIERMAN

Coming Developments in Agricultural Policy
- An Agricultural Policy for the United States
  - D. GALE JOHNSON—Chicago
- An Agricultural Policy for the United States
  - ARNOLD BREKKE—California
  - *Discussants,* J. D. BLACK, O. B. JESNESS, T. W. SCHULTZ

World Trade and American Agriculture
- The United States and World Agriculture
  - HOWARD TOLLEY—F.A.O.
- Prospects for Agricultural Exports
  - LAWRENCE WITT—Michigan State
  - *Discussants,* STANLEY ANDREWS, ANDREW CAIRNES

### SECTIONAL MEETINGS

Price Problems of the Tobacco Industry
- Trends in the Consumption of Tobacco Products
  - ELMO JACKSON—Vanderbilt
- Some Aspects of Tobacco Leaf Marketing
  - L. R. MARTIN—North Carolina
- The Government Program in Tobacco
  - ROBERT AUSTIN—Tennessee
  - *Discussant,* H. B. PRICE

Realism in Dealing With American Cotton Problems
- Cotton Price Policy in Relation to American Markets
  - DEAN M. R. HORNE—Mississippi
- Cotton Labor Requirements
  - FRANK WELCH—Mississippi
- World Prospects of Cotton
  - E. D. WHITE—U. S. Department of Agriculture
  - *Discussant,* JOHN WHITE

Fifty Years of Agricultural Cooperation
- Trends in Agricultural Expansion
  - H. E. ERDMAN—California
- Horizontal Combination and Diversification
  - JOE KNAPP—F.C.A.
- Vertical Expansion and Integration
  - E. FRED KOLLER—Minnesota
  - *Discussant,* WERNER Z. HIRSCH—California

Government Participation in Marketing
Some Problems in Quoting Market Prices
K. J. MACALLASTER—P.M.A.
Influence of the Pure Food and Drug Administration
E. W. GAUMNITZ—National Cheese Institute
Central Market Quotations and Country Buying
HUGH L. COOK—Wisconsin
Government Participation in Marketing
Impact of Marketing Agreements in Marketing Milk
LELAND SPENCER—Cornell
Marketing Agreements in Fruits and Vegetables
FLOYD E. HEDLUND—P.M.A.
*Discussants,* DON ANDERSON, JOHN B. ROBERTS
Government Participation in Marketing
Impact of the C.C.C. Operations on Farm Prices and Market Channels
O. C. STINE—B.A.E.
*Discussant,* GEOFFREY SHEPHERD
Agricultural Statistics
Place of Agricultural Data in Economic and Marketing Research
O. V. WELLS—B.A.E.
Current Frontiers in Farm Price Data
B. R. STAUBER—B.A.E.
*Discussants,* HENRY H. TAYLOR, ROY CONVERSE
Farm Management—Problems Needing Study
Overall Adjustments Required in Southern Agriculture
E. L. LANGSFORD—B.A.E.
Adjustment Problems in Midwest Agriculture
J. C. BOTTUM—Purdue
Farm Management—Application and Limitation of Common Methods of Analysis
Application of Static Economic Theory to Farm Management Problems
IRVING F. FELLOWS—Connecticut
Limitation of Static Economic Theory in Farm Management Problems
BROOKS JAMES—North Carolina
Farm Management—Application and Needed Developments in New Methods of Analysis
Application of Newer Economic Theory Techniques to Farm Management
EARL HEADY—Iowa State
Needed Developments in Economic Theory Techniques in Farm Management Research
GLENN JOHNSON—Kentucky
Land Economics
Land Economics Research in Retrospect and Prospect
E. H. WEIKING—B.A.E.
Panel on Effects of Mechanization in Leasing Arrangements
An Experiment in Landlord-Tenant Relationships
G. W. FORSTER—North Carolina
Annual Banquet—Speaker—ROBERT CALKINS
General Education Board

# REPORT OF THE SECRETARY-TREASURER FOR FISCAL YEAR ENDED NOVEMBER 30, 1949

*Membership.* The membership list increased slightly during 1949, but the increase was much smaller than in the two previous years. A net increase of 54 regular individual members was offset in part by small net decreases in junior members and subscribers. The net change in the total of members and subscribers was an increase of 26. This compares with an increase of 145 in 1948 and 159 in 1947. Details of the changes in 1949 are shown in the following table.

*Summary of Membership and Subscriptions*

| | Nov. 30, 1948 | Additions | Cancellations | Nov. 30, 1949 | Net change |
|---|---|---|---|---|---|
| Individual members | 1,269 | 132 | 76 | 1,325 | +54 |
| Junior members | 173 | 60 | 74 | 159 | −14 |
| U. S. libraries and firms | 324 | 40 | 43 | 321 | − 3 |
| Foreign libraries and firms | 230 | 67 | 78 | 219 | −11 |
| Exchanges | 11 | 0 | 0 | 11 | 0 |
| Total | 2,007 | 299 | 271 | 2,035 | +26 |

*Finances.* Expenses exceeded operating income by $3,082.30. Income in the form of dividends and interest, totaling $1,858.01, reduced this deficit to $1,224.29. Stocks and bonds owned by the Association increased in value by $1,586.25. Thus, the net worth of the Association increased $361.96. The accrued expenses of $972.99 include $800.00 owing to the University of Illinois for clerical services in the Secretary-Treasurer's office and $172.99 for his travel expenses to annual and Executive Committee meetings.

Income from dues and subscriptions decreased from $10,030.90 in 1948 to $8,802.24 in 1949. This requires some explanation since the number of members and subscribers increased slightly during the year.

Records for 1948 show average receipts from dues and subscriptions of $5.03 per member-subscribers. In 1949 the corresponding average was $4.30. The average for 1948 was peculiarly high since no member-subscribers pay more than $5.00 and many pay less. The Association receives only $4.50 from joint members with the Western Farm Economics Association and the Canadian Agricultural Economics Society, and from subscriptions received through agencies, and from several members in foreign countries who pay through agencies. Junior members pay only $3.00 per year.

Dues and subscription payments sometimes apply to periods other than the fiscal year in which they are received. For example, a considerable number of members paid their 1949 dues in November 1948 when they returned their election ballots. The 1949 election was held in August, too early for payment of 1950 dues. This prepayment of 1949 dues served to increase income during fiscal 1948 and to decrease it during fiscal 1949.

*Income and Expenses*
*Year Ended November 30, 1949*

| | | 1949 | 1948 |
|---|---|---|---|
| *Operating income* | | | |
| Dues and subscriptions | $ 8,802.24 | | |
| Back numbers sold | 680.00 | | |
| Reprints sold | 371.78 | | |
| Advertising sold | 75.00 | | |
| Unclassified income | 105.90 | $10,034.92 | $12,419.16 |
| *Operating expenses* | | | |
| Journal printing | | | |
| Four issues | $ 9,786.03 | | |
| Reprints | 834.44 | $10,620.47 | $10,317.13 |
| Other expenditures | | | |
| Annual and Exec. Com. Mtgs. | $ 615.36 | | |
| Back numbers purchased | 143.46 | | |
| Office supplies | 201.66 | | |
| Postage and wires | 111.37 | | |
| Best Article Award | 100.00 | | |
| Editorial expense | 329.94 | | |
| Secretary's office | 931.91 | | |
| Miscellaneous | 63.05 | $ 2,496.75 | $ 1,924.17 |
| Total expenses | | $13,117.22 | $12,241.30 |
| Operating surplus (+) or deficit (−) | | −3,082.30 | +177.86 |
| Dividends and interest | | 1,858.01 | 1,805.25 |
| Net surplus (+) or deficit (−) | | −1,224.29 | +2,062.54 |

*Financial Statement*
*November 30, 1949*

| | | |
|---|---|---|
| *Assets* | | |
| Cash in bank | $ 6,788.86 | |
| Stocks | 19,361.00 | |
| U. S. securities | 43,970.00 | $70,114.86 |
| Liabilities | | |
| Special Grants Fund | 14,426.00 | |
| Accrued expenses (See text) | 972.99 | $15,397.99 |
| Net worth | | $54,716.87 |

*Adjustments in Net Worth*

| | | |
|---|---|---|
| Net worth, December 1, 1948 | $54,354.91 | |
| Expenses over receipts | 1,224.29 | $53,130.62 |
| Add | | |
| Appreciation U. S. bonds | $ 75.00 | |
| Appreciation stocks | 1,511.25 | $ 1,586.25 |
| Net worth November 30, 1949 | | $54,716.87 |

Respectfully submitted,
L. H. SIMERL, *Secretary-Treasurer*

*Report of the Auditors*

In compliance with the request of the President of the American Farm Economic Association, we have examined the accounts of the Secretary-Treasurer, L. H. Simerl, for the year ending November 30, 1949. We have checked vouchers, canceled checks, bank debit slips, and bank statements with expenses as shown in the treasurer's books and found the book statement of expenses correct.

We have checked bank deposit slips, bank credit slips, and bank statements with receipts as shown in the books and found the book statement of receipts correct. The November 30, 1949, bank balance was found to be in agreement with the balance as shown on the secretary-treasurer's books. We have inspected the bonds and stock certificates kept in a safety deposit box in the First National Bank, Champaign, Illinois.

We have checked the treasurer's report of income and expenses for the year and the financial statement as of November 30, 1949, and found that they accurately reflect the transactions and financial position of the Association as shown by his records.

Respectfully submitted,
W. N. THOMPSON
H. C. M. CASE, *Auditors*

# NEWS NOTES

A special series of seminars in agricultural marketing will be held at Iowa State College during the first summer session, June 12 to July 19, 1950. Each week will be devoted to a different subject, and several two-hour sessions will be held each week. Different representatives for each subject—from the trade, from the USDA, from the farm, and from the campus—will constitute a panel. Each will give his views, and all the views will be discussed together by the panel and the students in attendance.

Raleigh Barlowe has been appointed associate professor at Michigan State College. He is on cooperative appointment with the Bureau of Agricultural Economics.

Lawrence L. Boger has been promoted from instructor to assistant professor in agricultural economics research at Michigan State College.

Warren Burger will finish work on his Ph.D. at Cornell in July, 1950. He has accepted a position as extension economist at Cornell.

John C. Crecink has joined the staff of the Division of Land Economics, BAE, and is stationed at Fort Collins, Colo., where he is working in cooperation with the Agricultural Experiment Station. Mr. Crecink has an M.A. from the University of Virginia and during the last 18 months has been doing graduate work at Iowa State College.

Jonathan Czar has resigned from the BAE, Division of Farm Management and Costs, to take up newspaper work in Bridgeport, Conn.

L. B. Darrah will be on sabbatic leave from Cornell during the 1950 fall semester. He plans to visit livestock and poultry marketing agencies and act as consultant to PMA.

John H. Davis of the National Council of Farmer Cooperatives received his Ph.D. degree from the University of Minnesota in December, 1949.

Warren E. Deviney, a recent graduate of Clemson College, has joined the Washington staff of BAE. He will work in the Costs and Returns section of the Division of Farm Management and Costs.

A. A. Dowell, professor of Agricultural Economics, University of Minnesota, left April 1 for study during the spring and summer in the United Kingdom, Western and Southern Europe, and the Near East. He will study market outlets, marketing methods, and competing sources of supply for agricultural products produced on Minnesota farms.

Wendell Earle will finish work on his Ph.D. at Cornell in June and has accepted a position as extension economist in poultry marketing at Cornell.

Paul J. Findlen has returned to the Extension Service as extension economist, Division of Agricultural Economics, from the ECA mission in Ireland.

Richard Foote is currently working in the Division of Field Crop Statistics, BAE, on the RMA project dealing with yield trends and crop-weather relationships.

J. K. Galbraith, O. B. Jesness, Lowry Nelson, W. H. Stead, T. W. Schultz, C. C. Zimmerman, and J. S. Davis have been invited to consult with the President's Water Resources Policy Commission on its task.

Frederic B. Garver, professor of Economics at the University of Minnesota, died of heart attack on February 22, 1950.

Marshall Godwin has been appointed associate professor of agricultural economics and marketing at the University of Maryland. Dr. Godwin received his Ph.D. from Cornell. He will teach and conduct research in the fields of fruit and vegetable marketing.

William A. Green has transferred from the Soil Conservation Service to the Division of Land Economics, BAE, at Lincoln, Neb. He will work on economic problems of the Missouri Basin, with special emphasis on aspects of flood control.

The following have completed their Ph.D. theses and passed their final oral examinations at Harvard since last June's Commencement: Lee R. Martin, North Carolina State College; W. W. McPherson, North Carolina State College; Solon Barraclough, Harvard University; Russell Bierman, Federal Reserve Bank; Warren Bilkey, University of Connecticut; Tyrus Timm, Texas A & M College; Ronald Mighell, BAE; Richard Wheeler, Harvard University, and Leonard Schruben, Kansas State College.

L. H. Hauter, Assistant Director of the Farm Ownership Division of the Farmers Home Administration passed away of a heart attack on March 22, 1950 at the age of 62. From 1921 to 1933 he was head of the Economics Department and Assistant Director of Agricultural Extension at New Mexico State College. In June 1935 he joined the staff of the Resettlement Administration and remained with that organization and its successors until his death. Mrs. Hauter, 4600 Sedwick St., N. W., Washington, D. C., reports that Mr. Hauter's complete set of the Journal of Farm Economics from 1919 to 1950 and a complete set of Social Science Research bulletins on Scope and Method in Agricultural Economics Research and a complete set of American Farm Management Association Reports from 1913 to 1917 are for sale.

Irwin R. Hedges has taken an 18-month leave of absence from his position as Head of the Dairy Section, Cooperative Research and Service Division, FCA, to serve with the French Mission of ECA in Paris. Donald E. Hirsch will serve as Acting Head of the Dairy Section during Dr. Hedges' absence.

Rex D. Helfenstine, with an M.S. from Iowa State College in 1947, and graduate work at the University of California, has joined the staff of BAE, Division of Farm Management and Costs. He is assigned to the Missouri Valley studies with headquarters at Fargo, N. D.

Donald C. Horton has transferred from the Division of Agricultural Finance, BAE, to the Bureau of the Budget, Division of Statistical Standards.

Robert F. Hutton, who has been doing graduate work at Harvard, has been granted a year's interneship with the Division of Agricultural Finance, BAE, in connection with a cooperative study of the lending policies of country banks.

Charles David Hyson is Chief of the Trade and Payments Division, ECA Special Mission to Oslo, Norway.

Sherman E. Johnson, Assistant Chief for Production Economics, BAE,

was sent to England on March 1 on the ECA assignment to study and evaluate the work in agricultural economics at eleven colleges and universities.

B. Webster Johnson, formerly Head of the Division of Land Economics, BAE, is now serving as consultant on economic research and service work, to the Assistant Chief in charge of Production Economics, and is engaged in research on land problems and policies.

Don Kaldor took a temporary leave of absence from Iowa State College in January to work with the United States Department of Commerce on agricultural trade policy.

C. DelMar Kearl received his Ph.D. at Cornell in September, 1949 and now has the position of assistant professor in Farm Management at Cornell.

Anna P. Kelly retired on March 1 from the BAE after 31 years in the Federal service, most of it in the Bureau. Miss Kelly was assigned to work on small grains in the Division of Field Crop Statistics.

Milo G. Lacey, Jr., has joined the staff of the Extension Service in Washington to work with Dr. Chas. W. Hauck in the fruit and vegetable marketing section on extension training of retailers in the better handling of fresh fruits and vegetables. Mr. Lacy is a graduate of the University of Oregon, and has taken graduate work at the University of California.

Oscar LeBeau has transferred from the Fruit and Vegetable Section FCA, to the Membership Relations Section of the Cooperative Research and Service Division.

Neil McLeod will finish work on his Ph.D. at Cornell in June, 1950. He has accepted a position with Loblaw Groceterias, Inc., in Buffalo, N. Y.

T. W. Manning has accepted an appointment in the Division of Agricultural Economics at the University of Minnesota. Mr. Manning was formerly at the Oklahoma A. & M. College.

Milton L. Manuel, Kansas State College, is assisting the Bureau of Census in the training of supervisors for the Census of Agriculture.

Edwin H. Matzen has transferred from the Cooperative Research and Service Division, FCA, to assume new responsibilities as Chief of the Research Division, Poultry Branch, PMA, Washington, D. C.

Arthur Mauch has been promoted to professor of Agricultural Economics at Michigan State College.

John J. Morgan, Mark Kirkham, Robert H. Lando and Richard A. Daniels, all of the Bureau of Agricultural Economics, have conducted Management Improvement surveys in Bureau offices in Albany, N. Y., Gulfport, Miss., Portland, Ore., Helena, Mont., and Springfield, Ill. Offices in Raleigh, N. C., and Austin, Tex., are also to be surveyed.

Three recent additions to the Department of Agricultural Economics at the University of Nebraska are Philip A. Henderson, associate economist and manager of the University's Development Farms; Clarence J. Miller, assistant professor, to teach and conduct research in marketing and agricultural policy; and Walter E. Hammond, assistant chemurgic economist, to analyze the commercial potential of chemurgy projects in Nebraska.

Glen T. Nelson, who has just completed work for a Ph.D. degree at the

University of Illinois, has joined the Oregon State College staff where he will do research and teaching in marketing.

Wilfred H. Pine, Kansas State College, has been granted a year's leave of absence to accept a position as Agricultural Economist with the Agricultural Mission of the ECA in Turkey.

Russell S. Ratcliffe, recently of the Sugar Branch, PMA, has transferred to the Washington staff of the BAE, assigned to the Division of Farm Management and Costs.

E. H. Regnier, associate professor of rural sociology at the University of Illinois, has been granted a year's leave of absence beginning June 1, 1940. He will spend part of the year taking graduate work at Indiana University, and will make a survey of the progress of extension recreation programs by conferences with extension directors, their 4-H staffs, and supervisors in several states.

Glenn E. Riddell has been detailed from the Soil Conservation Service to the Office of Foreign Agricultural Relations. On this detail Mr. Riddell is working on the study of European cooperatives as potential buyers and sellers of products which United States cooperatives buy and sell. This is an RMA project sponsored jointly by the Cooperative Research and Service Division of FCA and the Office of Foreign Agricultural Relations.

Claud L. Scroggs, formerly associate editor of *The Southern Agriculturist*, in charge of economics and marketing, has joined the staff of the Purchasing Section of the Cooperative Research and Service Division, FCA, as Senior Agricultural Economist.

Ralph W. Shaw from Mississippi State College joined the staff of the Cooperative Research and Service Division, FCA, on February 1 to work in the Cotton and Oilseeds Section.

Lloyd Slater is leaving his position of assistant professor in extension at Cornell about July 1 to set up a private agricultural and business service with headquarters in Ithaca, New York.

Leland Spencer will be on sabbatic leave from Cornell from July 1, 1950 to January 31, 1951. His plans are at present indefinite, but he intends to spend his time writing and traveling.

Elmer A. Starch has left for Ankara, Turkey, as leader of a group of eight consultants in various phases of agriculture including irrigation, grassland utilization, cotton improvement, farm management and extension methods. The group will work out a program for Turkish agriculture which will serve as a pattern for other semi-arid countries. The arrangement was made between the Turkish Government and the Great Plains Agricultural Council through the ECA.

Christian Stokstad, Division of Farm Management and Costs, BAE, has transferred from field work in Montana with the Western section to Washington, D. C., where he will work with the Farm Costs and Returns section.

Thomas Strong, who has been at Harvard during the past two years, returned to Australia early in March to become assistant chief of the Bureau of Agricultural Economics.

Boris C. Sweling, Brown University, will join the staff of the Food Re-

search Institute of Stanford University at the beginning of the academic year 1950–51.

Stanley W. Voelker, agricultural economist with the Division of Land Economics, BAE, has transferred his headquarters from Fort Collins, Colorado, to Fargo, North Dakota.

Morris White, who recently completed the requirement for the Ph.D. degree at Purdue, has accepted a position as associate agricultural economist at Alabama Polytechnic Institute.

Ernst H. Wiecking recently returned to the BAE as Head of the Division of Land Economics.

Walter W. Wilcox has resigned from the University of Wisconsin and joined the staff of the Library of Congress where he will serve the committees and members of Congress as economic analyst on farm legislation.

Odin Wilhelmy has received his Ph. D. from Cornell University and now has the position of assistant professor in the School of Nutrition at Cornell.

Holbrook Working, Food Research Institute of Stanford University, is directing a study on price effects of speculation under a three-year grant recently made by the Merrill Foundation for Advancement of Financial Knowledge.

Sarah L. Yarnall has transferred from the Division of Agricultural Finance, BAE, to the Office of the Technical staff, U. S. Treasury, to work on certain aspects of public debt management.

Bushrod Allin, BAE, will teach two graduate courses in agricultural economics at the University of Wisconsin during the eight-weeks summer session—June 26 to August 18.

Erven J. Long has resigned his position in the Department of Agricultural Economics, University of Wisconsin, and is assuming the position of Head of the Department of Agricultural Economics and Rural Sociology, University of Tennessee.